No. 23-2040

IN THE

United States Court of Appeals for the Federal Circuit

SONOS, INC.,

Appellant,

v.

GOOGLE LLC,

Appellee.

On Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board No. IPR2021-01563

JOINT APPENDIX

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Paper 33
Entered: April 10, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

SONOS, INC.,
Patent Owner.

IPR2021-01563
Patent 9,967,615 B2

Before MICHAEL R. ZECHER, TERRENCE W. McMILLIN, and GARTH D. BAER, *Administrative Patent Judges*.

McMILLIN, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

A. Background and Summary

On September 28, 2021, Google LLC ("Petitioner")[1] filed a Petition for *inter partes* review ("IPR") of claims 1, 2, 6–14, 18–25, and 27–29 (the "challenged claims") of U.S. Patent No. 9,967,615 B2 (Ex. 1001, "the '615 patent"). Paper 1 ("Pet."). Sonos, Inc. ("Patent Owner")[2] filed a Preliminary Response. Paper 6 ("Preliminary Response" or "Prelim. Resp."). With our authorization, Petitioner thereafter filed a Reply to Patent Owner's Preliminary Response (Paper 8) and Patent Owner filed a Sur-reply in Support of its Preliminary Response (Paper 12) to address the issue of discretionary denial under 35 U.S.C. § 314.[3] Taking into account the arguments and evidence presented in these papers, we determined that the information presented in the Petition established that there was a reasonable likelihood that Petitioner would prevail with respect to challenging at least one of claims 1, 2, 6–14, 18–25, and 27–29 of the '615 patent as unpatentable. Pursuant to 35 U.S.C. § 314, we instituted this IPR on April 12, 2022, as to all challenged claims and all grounds raised in the Petition. Paper 14 ("Institution Decision" or "Dec. on Inst.").

During trial, Patent Owner filed a Response (Paper 22, "PO Resp."), Petitioner filed a Reply to the Response (Paper 23, "Pet. Reply"), and Patent

[1] Petitioner identifies itself, Google LLC, as the real party-in-interest to this proceeding. Pet. 76.
[2] Patent Owner identifies itself, Sonos, Inc., as the real party-in-interest to this proceeding. Paper 3, 1.
[3] Additionally, with our authorization, Patent Owner filed a Motion to Dismiss Under 35 U.S.C. § 315(a) (Paper 7, "Motion") and Petitioner filed an Opposition to Patent Owner's Motion to Dismiss (Paper 10). We denied this Motion on April 12, 2022 (Paper 13).

Owner filed a Sur-reply to the Reply (Paper 25, "PO Sur-reply"). An oral argument was held on January 18, 2023, and a transcript of the hearing is included in the record. Paper 32 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6. This decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of claims 1, 2, 6–14, 18–25, and 27–29 of the '615 patent. For the reasons we identify below, we hold that Petitioner has demonstrated by a preponderance of the evidence that all challenged claims are unpatentable.

B. Related Proceedings

The parties identify *Google LLC v. Sonos, Inc.*, No. 3:20-cv-06754 (N.D. Cal.) as a related proceeding in which the '615 patent has been asserted. Pet. 76; Paper 3, 1. The Parties also identify *Sonos, Inc. v. Google LLC*, No. 3:21-cv-07559 (N.D. Cal.), which was transferred from the Western District of Texas (*Sonos, Inc. v. Google LLC*, No. 6:20-cv-00881 (W.D. Tex.)), as involving the '615 patent. Pet. 76; Prelim. Resp. 1 n.1.

C. The '615 Patent

The '615 patent is titled "Networked Music Playback" and issued on May 8, 2018. Ex. 1001, codes (45), (54). The application for the '615 patent (U.S. Patent Appl. No. 14/628,952) was filed on February 23, 2015, as a continuation of, and claims priority to, an application (U.S. Patent Appl. No. 13/341,237) filed on December 30, 2011 (now U.S. Patent No. 9,654,821). *Id.* at codes (21), (22), (63), 1:6–10.

The '615 patent relates to "providing music for playback via one or more devices on a playback data network." *Id.* at 1:14–15. In particular, the '615 patent describes connecting one or more multimedia playback devices via a network to share music and other multimedia content among devices.

Id. at 1:66–2:9. The '615 patent also describes facilitating music streaming from a music-playing application to one or more multimedia content playback systems and locations. *Id.* at 2:10–17, 12:8–14.

Figure 7 of the '615 patent, reproduced below, shows an embodiment using a cloud-based network to distribute content on one or more local networks of multimedia playback devices. *Id.* at 12:19–25.

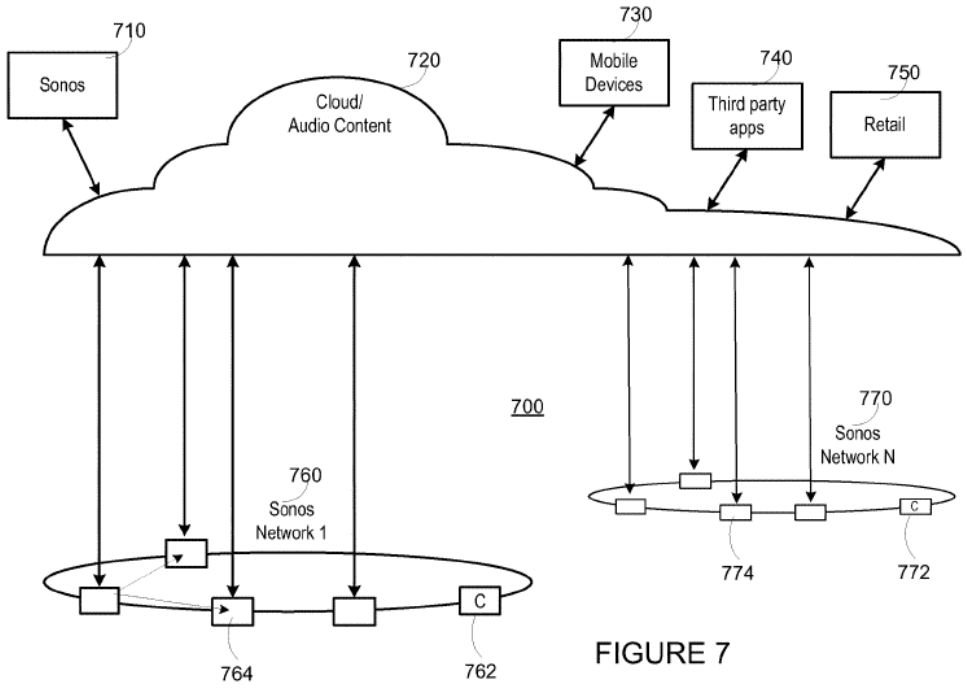

FIGURE 7

Figure 7 of the '615 patent depicts system 700 including cloud network 710, content providers 720, 730, 740, 750, and local playback networks 760, 770. *Id.* at 12:31–34. Using cloud 710, content providers 720, 730, 740, 750 provide multimedia content to controllers 762, 772 and local playback devices 764, 774 in local playback networks 760, 770. *Id.* at 12:34–43.

> For example, a user listens to a third party music application (e.g., Pandora™ Rhapsody™, Spotify™, and so on) on her smart phone while commuting. She's enjoying the current channel and, as she walks in the door to her home, selects an option to continue playing that channel on her household music playback system (e.g., Sonos™). The

> playback system picks up from the same spot on the selected channel that was on her phone and outputs that content (e.g., that song) on speakers and/or other playback devices connected to the household playback system. A uniform resource indicator (URI) (e.g., a uniform resource locator (URL)) can be passed to a playback device to fetch content from a cloud and/or other networked source, for example. A playback device, such as a zone player, can fetch content on its own without use of a controller, for example. Once the zone player has a URL (or some other identification or address) for a song and/or playlist, the zone player can run on its own to fetch the content. Songs and/or other multimedia content can be retrieved from the Internet rather than a local device (e.g., a compact disc (CD)), for example.

Id. at 12:44–63.

D. Challenged Claims

Petitioner challenges claims 1, 2, 6–14, 18–25, and 27–29 of the '615 patent. Pet. 1. Of the challenged claims, claim 1 is an independent method claim, claim 13 is an independent non-transitory computer readable storage medium claim, and claim 25 is an independent apparatus claim. Ex. 1001, 17:36–18:12, 19:48–20:27, 22:5–58. Claim 1 recites:

> 1. A method comprising:
>
> causing, via a control device, a graphical interface to display a control interface including one or more transport controls to control playback by the control device;
>
> after connecting to a local area network via a network interface, identifying, via the control device, playback devices connected to the local area network;
>
> causing, via the control device, the graphical interface to display a selectable option for transferring playback from the control device;
>
> detecting, via the control device, a set of inputs to transfer playback from the control device to a particular playback device, wherein the set of inputs comprises: (i) a selection of the selectable option for transferring playback from the control

device and (ii) a selection of the particular playback device from the identified playback devices connected to the local area network;

after detecting the set of inputs to transfer playback from the control device to the particular playback device, causing playback to be transferred from the control device to the particular playback device, wherein transferring playback from the control device to the particular playback device comprises:

(a) causing one or more first cloud servers to add multimedia content to a local playback queue on the particular playback device, wherein adding the multimedia content to the local playback queue comprises the one or more first cloud servers adding, to the local playback queue, one or more resource locators corresponding to respective locations of the multimedia content at one or more second cloud servers of a streaming content service;

(b) causing playback at the control device to be stopped; and

(c) modifying the one or more transport controls of the control interface to control playback by the playback device; and

causing the particular playback device to play back the multimedia content, wherein the particular playback device playing back the multimedia content comprises the particular playback device retrieving the multimedia content from one or more second cloud servers of a streaming content service and playing back the retrieved multimedia content.

Id. at 17:36–18:12.

E. The Asserted Grounds

Petitioner challenges claims 1, 2, 6–14, 18–25, and 27–29 of the '615 patent based on the grounds set forth in the table below.

Claims Challenged	35 U.S.C. §	References
1, 6–13, 18–25, 27–29	103(a)[4]	Al-Shaykh[5], Qureshey[6]
1, 6–13, 18–25, 27–29	103(a)	Al-Shaykh, Qureshey, Phillips[7]
2, 14	103(a)	Al-Shaykh, Qureshey, Ramsay[8]
2, 14	103(a)	Al-Shaykh, Qureshey, Phillips, Ramsay

Pet. 2–3. Petitioner relies on the Declaration of Dr. Harry Bims (Ex. 1003, "Bims Decl."). Patent Owner relies on the Declaration of Dr. Douglas C. Schmidt (Ex. 2018, "Schmidt Decl.").

II. ANALYSIS

A. Claim Construction

Claim construction in this proceeding is governed by 37 C.F.R. § 42.100(b) (2021), which provides:

> In an *inter partes* review proceeding, a claim of a patent, or a claim proposed in a motion to amend under §42.121, shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.

[4] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011), revised 35 U.S.C. § 103 effective March 16, 2013. Because the challenged patent claims priority to applications filed before March 16, 2013, we refer to the pre-AIA version of § 103. Our analysis, findings, and conclusions on the present record apply equally to the corresponding post-AIA version of § 103.
[5] US 2011/0131520 A1, published June 2, 2011 (Ex. 1007).
[6] US 8,050,652 B2, issued Nov. 1, 2011 (Ex. 1008).
[7] US 8,799,496 B2, issued Aug. 5, 2014 (Ex. 1006).
[8] US 8,724,600 B2, issued May 13, 2014 (Ex. 1009).

Under the standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–19 (Fed. Cir. 2005) (en banc), claim terms are given their ordinary and customary meaning, as would have been understood by a person of ordinary skill in the art at the time of the invention, in light of the language of the claims, the specification, and the prosecution history of record. *See Thorner v. Sony Comput. Ent. Am. LLC*, 669 F.3d 1362, 1365–66 (Fed. Cir. 2012). There is a "heavy presumption," however, that a claim term carries its ordinary and customary meaning. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (citation omitted). We only construe terms to the extent necessary to resolve the dispute between the parties. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("[W]e need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy.'") (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Petitioner relies on claim constructions previously determined by the U.S. District Court for the Western District of Texas and Patent Owner's proposed constructions for a number of terms. Pet. 12. The Petition states:

> In the related litigation, before the case was transferred, the District Court for the Western District of Texas held that the following terms that appear in the '615 patent should be construed to their plain and ordinary meanings: "multimedia," "network interface," "playback device," and "local area network." Exs. 1016-1017. Additionally, although dropped from consideration before argument and ruling, and thus not construed by the Texas district court, [Patent Owner] and the defendants agreed to construe "one or more transport controls to control playback" as "one or more user input elements, each enabling control of a respective playback-related function." Ex. 1012 at 4. Additionally, [Patent Owner] proposed construing

> "wireless communication interface" as "physical component of a device that provides a wireless interconnection with a local area network." *Id.* at 3.
>
> [Patent Owner] also asserted the plain and ordinary meaning for the following claim terms: "first cloud servers," "second cloud servers of a streaming content service," and "playback queue." *Id.* at 4. For the purposes of this IPR, [Petitioner] adopts the constructions of the District Court for the Western District of Texas and [Patent Owner]'s proposed claim constructions for those terms not presented for construction and construed by the district court. *See* Bims [Decl.], ¶¶38-40.

Id. Petitioner argues for no express construction, and provides no support for any construction of any claim term beyond the plain and ordinary meaning, except for the alleged agreement of the parties relating to the phrases "one or more transport controls to control playback" and "wireless communication interface." Patent Owner does not address the construction of these two phrases. *See* PO Resp. 19–25 (addressing "Claim Construction"). As there does not appear to be a dispute between the parties relating to any of the terms or phrases discussed in the Petition,[9] we apply the plain and ordinary meaning to those terms and phrases, except for the two phrases for which there was an agreement otherwise. For those two phrases, we construe them as agreed between the parties in the Western District of Texas. But, even with regard to those two phrases, our decision

[9] Patent Owner's Response includes a chart containing claim terms and meanings (largely, plain and ordinary meaning) presented by the parties in the parallel district court litigation but does not request that we do anything with this information including providing any argument that express construction of any of these terms is necessary to resolve any dispute in this proceeding. *See* PO Resp. 19. We apply the plain and ordinary meaning to the terms in this chart.

would not be different if we applied the plain and ordinary meaning of these terms without express construction.

In its Response, Patent Owner presents arguments in support of applying the plain and ordinary meaning to the claim phrases "transferring playback" and "local playback queue." *See* PO Resp. 20–25. With regard to "transferring playback," the Response states:

> [A] POSA [person of skill in the art] would ***not*** have equated the claimed function of the control device "transferring playback" to a playback device with the prior art's function of a control device ***merely*** "transferring media content" (e.g., transmitting or sourcing media data) to a playback device (without more). [Ex. 2018] ¶75. Rather, a POSA would have understood from the plain claim language that the control device must be capable of being in a playback (or rendering) state when it "detect[s] a set of inputs to transfer playback" and after such detecting, "caus[e] playback to be transferred from the control device to the particular playback device," which includes, *inter alia,* "causing playback at the control device to be stopped" and "causing the particular playback device to playback the multimedia content." *Id.*

Id. at 21. Petitioner does not dispute Patent Owner's meaning for "transferring playback." *See* Tr. 10:15–16 ("It is merely referring to transferring playback, or rendering from one device to another."). And, Petitioner contends that applying Patent Owner's meaning to "transferring playback," Al-Shaykh discloses this function as recited. *See, e.g.*, Pet. Reply 6 ("[Patent Owner] defines 'transferring playback' as transferring the function of rendering multimedia content . . . . This is what Al-Shaykh does.").

With regard to "local playback queue," the Response states:

> [A] POSA would have understood that, in the context of the '615 Patent, the plain and ordinary meaning of a "playback

> queue" is a "container" that can hold multimedia (e.g., a resource locator corresponding to a particular music track) for playback – or more precisely, hold multimedia that a given device ***is set to play***. [Ex. 2018] ¶81. A POSA would therefore have understood that the plain and ordinary meaning of the claimed "local playback queue" is a data construct (e.g., "container") on the "playback device" that can contain one or more resource locators, each of which corresponds to multimedia content that the "playback device" is to playback. *Id.*

PO Resp. 23.[10] Petitioner does not appear to dispute Patent Owner's meaning for "playback queue." *See* Tr. 8:3–22. And, in the Reply, Petitioner argues that Qureshey discloses a "playback queue" under any meaning discussed in the Patent Owner's Response. *See* Pet. Reply 8–10.

As there does not appear to be a dispute between the parties that the plain and ordinary meanings of these phrases in the context of the '615 patent should be applied, for claim construction purposes, we adopt the plain and ordinary meanings set forth by Patent Owner for "transferring playback" and "local playback queue." To the extent necessary, we further discuss these phrases and the contentions regarding their meanings as it pertains to the relevant teachings of the cited prior art contested by the parties in our analysis below.

We further determine that no additional express construction is necessary to resolve any controversy in this proceeding.

---

[10] As shown in the chart provided by Patent Owner, in the parallel district court litigation, Patent Owner proposed giving "playback queue" its plain and ordinary meaning without further specification of that meaning, even though Patent Owner did specify the plain and ordinary meaning of most terms in the chart to which Patent Owner applied a plain and ordinary meaning. *See* PO Resp. 19.

B. Legal Standards

A patent claim is unpatentable as obvious if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, "would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: we (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of non-obviousness.[11] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

"In an IPR, the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring IPR petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim")). Petitioners cannot satisfy their burden of proving obviousness by employing "mere conclusory statements." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

C. Level of Ordinary Skill in the Art

With regard to the level of ordinary skill in the art, Petitioner contends:

> A POSITA [person of ordinary skill in the art] would have had a bachelor's degree in physics, mechanical

[11] The parties have not asserted or otherwise directed our attention to any objective evidence of nonobviousness.

> engineering, electrical engineering, or audio engineering (or an equivalent degree), and three years of experience designing or implementing networked wireless systems related to streaming media over the Internet. Bims [Decl.], ¶¶20–23. With more education, for example, postgraduate degrees and/or study, less experience is needed to attain an ordinary level of skill in the art. Similarly, more experience can substitute for formal education. *Id.*

Pet. 11. Petitioner's proposal is consistent with the technology described in the Specification and the cited prior art. In the Institution Decision, we adopted Petitioner's proposed level of skill in the art. Dec. on Inst. 17–18. In the Response, Patent Owner agrees with our preliminary determination to adopt Petitioner's proposed level of ordinary skill in the art "[f]or purposes of this IPR." PO Resp. 18. We, therefore, apply Petitioner's proposed level of ordinary skill in the art in our obviousness analysis below.

D. Cited References

1. Al-Shaykh (Ex. 1007)

Al-Shaykh is titled "System and Method for Transferring Media Content from a Mobile Device to a Home Network." Ex. 1007, code (54). Al-Shaykh "relates to a system and a method which enable a media application on the mobile device to share media content with rendering devices in the home network." *Id.* ¶ 2.

Figure 1 of Al-Shaykh, reproduced below, "illustrates a system for transferring media content from a mobile device to a home network." *Id.* ¶ 68.

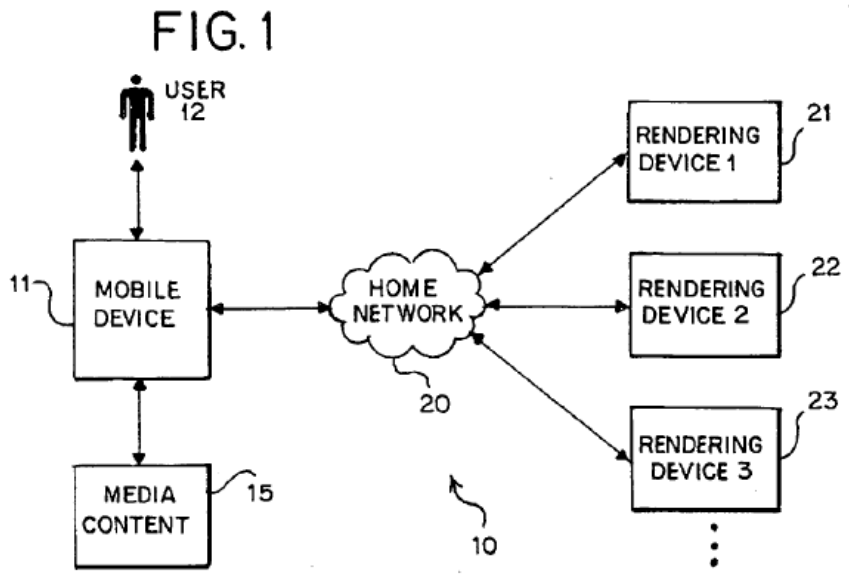

Figure 1 of Al-Shaykh depicts system 10 for transferring media content 15 from mobile device 11 to rendering devices 21, 22, 23 on home network 20. *Id.* ¶ 78. "[M]obile device 11 may have a display screen capable of displaying user interface elements and/or visual media content." *Id.* Rendering devices 21, 22, 23 "may be any rendering device capable of rendering the media content received using the home network 20 as known to one skilled in the art." *Id.* ¶ 81. Mobile device 11 uses a media application to access media content 15 stored locally or remotely provided via the Internet. *Id.* ¶¶ 82–83.

Figure 2, reproduced below, "illustrates a user interface of a media application having a set of controls and indications in an embodiment of the present invention." *Id.* ¶ 69.

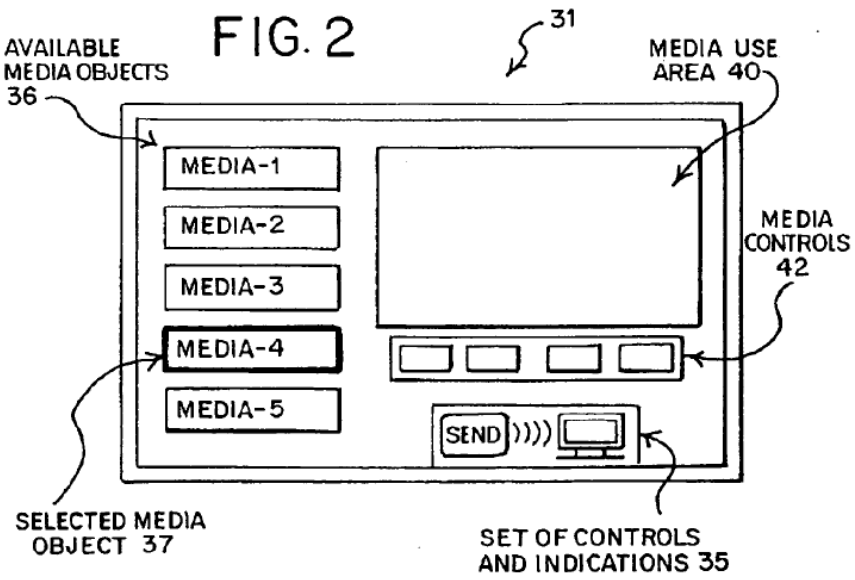

Figure 2 of Al-Shaykh depicts user interface 31 for the media application of mobile device 11. *Id.* ¶ 85. User interface 31 includes media controls 42 for controlling media-related tasks (*id.* ¶ 88) and set of controls and indications 35 for enabling the user to transfer media content to rendering devices 21, 22, 23 (*id.* ¶ 89).

> [M]obile device 11 may access and/or obtain the media content from a remote content service using a 3G carrier network for use in a media application on the mobile device 11. Then, the mobile device 11 may relay the media content to the target rendering device using the home network 20. In this case, the media content from the remote content service may flow through the mobile device 11 if the transfer of the media content is enabled using the set of controls and indications 35.

Id. ¶ 95.

Al-Shaykh published on June 2, 2011, based on an application filed on November 29, 2010. Ex. 1007, codes (22), (43). As noted above, the earliest priority date claimed for the '615 patent is December 30, 2011. Ex. 1001, code (63). Al-Shaykh is prior art to the '615 patent.

2. Qureshey (Ex. 1008)

Qureshey is titled "Method and Device for an Internet Radio Capable of Obtaining Playlist Content From a Content Server." Ex. 1008, code (54). Qureshey relates to "management and distribution of audio files over a computer network such as the Internet." *Id.* at 1:22–24.

Figure 11 of Qureshey, reproduced below, "is a perspective view of one embodiment of the computing environment of a network-enabled audio device configuration." *Id.* at 5:51–53.

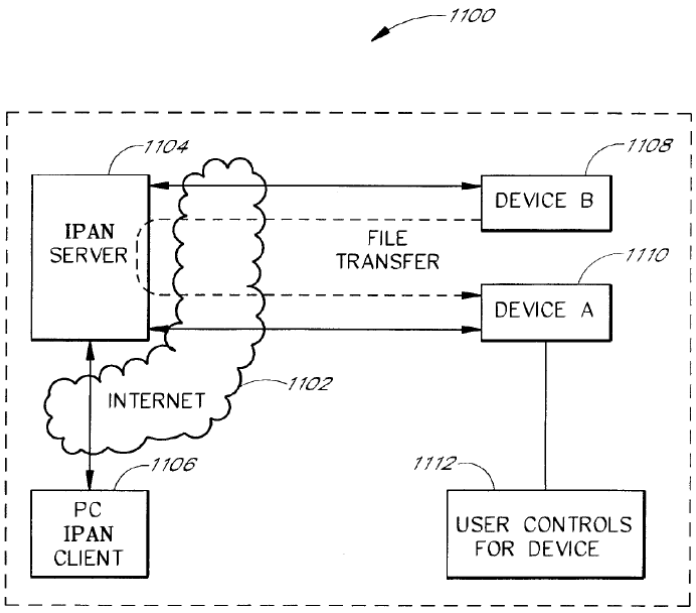

FIG. 11

Figure 11 of Qureshey depicts Internet Personal Audio Network (IPAN) 1100 including network 1102 (e.g., Internet), IPAN server 1104, personal computer (PC) IPAN client 1106, network-enabled audio device A 1110 with user controls 1112, and network-enabled audio device B 1108. *Id.* at 16:56–62. IPAN server 1104 maintains playlists, which are lists of audio files and associated URLs specifying where the audio files can be retrieved. *Id.* at 17:4–6, 21:62–65. Device A 1110 connects to IPAN server 1104,

which downloads a playlist to device A 1110. *Id.* at 16:67–17:2. Using a Playlist Manager audio player window (not shown), a user can assign a playlist to an audio device. *Id.* at 24:44–53, 28:11–16.

Qureshey issued on November 1, 2011, based on an application filed November 27, 2006, and claims priority to applications filed on March 12, 2001, and June 12, 1998. Ex. 1008, codes (22), (45), (63). As noted above, the earliest priority date claimed for the '615 patent is December 30, 2011. Ex. 1001, code (63). Qureshey is prior art to the '615 patent.

3. Phillips (Ex. 1006)

Phillips is titled "System and Method for Video Display Transfer Between Video Playback Devices." Ex. 1006, code (54). Phillips "relates to transferring display of video content from one device to another." *Id.* at 1:14–15.

Figure 1 of Phillips, reproduced below, "illustrates a system for transferring display of video content between a mobile device and a renderer located proximate to the mobile device according to one embodiment of the present disclosure." *Id.* at 2:8–11.

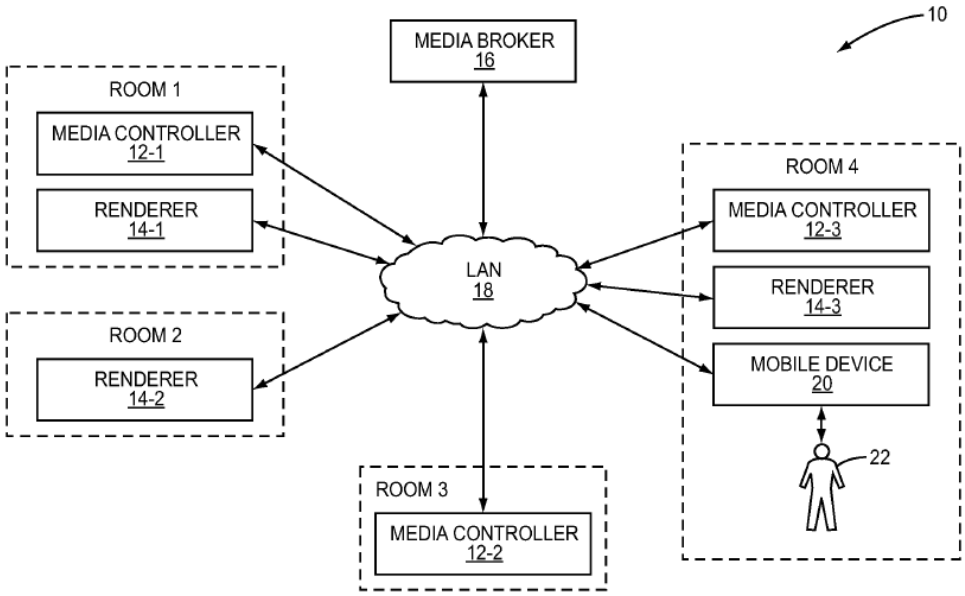

FIG. 1

Figure 1 of Phillips depicts system 10 including media controllers 12, renderers 14, and media broker 16 connected via Local Area Network (LAN) 18. *Id.* at 2:63–66. Media controllers 12 are sources of video content that are stored locally or accessed remotely from Internet-based streaming video services. *Id.* at 3:18–25. Renderers 14 are devices that provide playback of content from media controllers 12. *Id.* at 3:43–44. Media broker 16 manages transfer of video between mobile device 20 and renderers 14. *Id.* at 4:5–9. User 22 may initiate a transfer of video content using a graphical user interface on mobile device 20. *Id.* at 5:60–66.

Phillips is based on an application filed on July 19, 2010. Ex. 1006, code (22). As noted above, the earliest priority date claimed for the '615 patent is December 30, 2011. Ex. 1001, code (63). Phillips is prior art to the '615 patent.

4. Ramsay (Ex. 1009)

Ramsay is titled "Systems and Methods for Providing a Media Playback in a Networked Environment." Ex. 1009, code (54). Ramsay discloses a wireless web-enabled portable device interfacing with one or more networked media playback devices without the need for specialized software on the portable device. *Id.* at 1:9–13.

Figure 1 of Ramsay, reproduced below, "shows a networked media system according to one embodiment." *Id.* at 3:34–35.

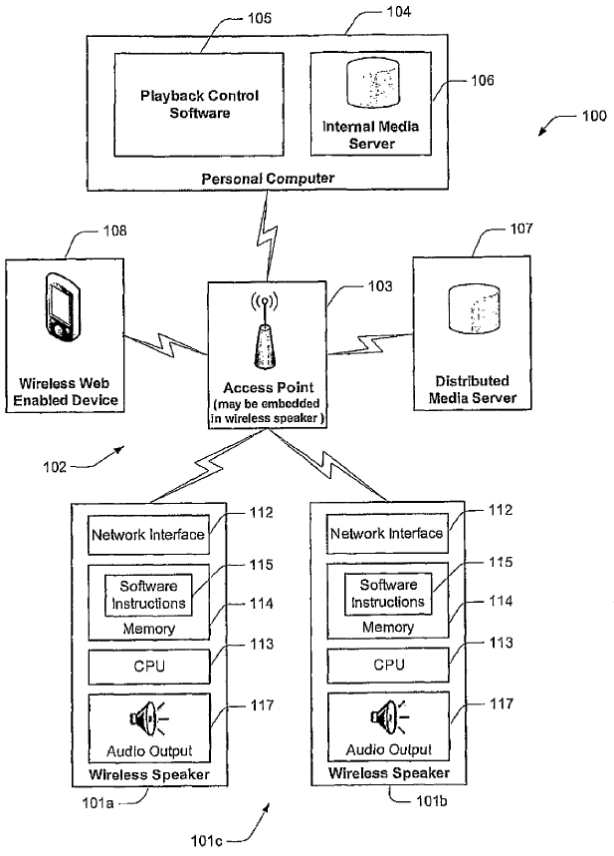

FIG. 1

Figure 1 of Ramsay depicts digital media playback system 100 including wireless speakers 101*a*, 101*b*, which are connected to wireless network 102 via access point 103 and controllable individually or together as speaker set

101*c*. *Id.* at 4:59–66. Wireless web-enabled device 108 (e.g., Apple iPhone) is used to control individual wireless speakers 101*a*, 101*b* or speaker set 101*c*. *Id.* at 5:25–30.

Ramsay is based on an application filed on January 7, 2009. Ex. 1009, code (22). As noted above, the earliest priority date claimed for the '615 patent is December 30, 2011. Ex. 1001, code (63). Ramsay is prior art to the '615 patent.

E. Obviousness of Claims 1, 6–13, 18–25, and 27–29

Petitioner contends that claims 1, 6–13, 18–25, and 27–29 of the '615 patent are unpatentable as obvious over the combined teachings of Al-Shaykh and Qureshey (Ground I) and over the combined teachings of Al-Shaykh, Qureshey, and Phillips (Ground II). Pet. 2, 13–57. The Petition states:

> Al-Shaykh discloses the base media playback system including a mobile control device with a GUI [graphical user interface] that enables a user to transfer playback to a rendering device and functionality to allow the rendering device to retrieve content for playback from a remote source. Qureshey discloses media playback systems with servers that provide different functionality including a first set of at least one server that adds information to the playback device that identifies the location of multimedia content to be played back and a second set of at least one server that is associated with a content service and stores the content to be played back. Lastly, to the extent Patent Owner argues that Ground I does not disclose ["causing playback at the control device to be stopped"], Al-Shaykh, Qureshey, and Phillips (Ground II) also disclose this element.

Id. at 13. In its Response, Patent Owner contends that "each proposed combination . . . misses key claim limitations" and the "Petition and the opinions of its expert, Dr. Bims, are also fraught with impermissible

hindsight bias." PO Resp. 1. Our limitation-by-limitation analysis of these challenges to the claims of the '615 patent and our discussion of the arguments and evidence presented by the parties is set forth below.

1. Independent Claim 1[12]

> *A method comprising:*
> *causing, via a control device, a graphical interface to display a control interface including one or more transport controls to control playback*[13] *by the control device;* (referred to by the parties as limitation or element 1-a (*see* Pet. 17; PO Resp. 18))

Petitioner relies on Al-Shaykh as teaching all the elements of the preamble and this limitation. Pet. 17–19 (citing Ex. 1003 (Bims Decl.) ¶¶ 79–80; Ex. 1007 ¶¶ 78, 85–88, 92, Figs. 1, 2, 12).[14] Petitioner contends that "Al-Shaykh discloses a 'mobile device' with a 'user interface 31' that includes various components, including a media controls interface area." *Id.* at 18. In cited paragraph 78, Al-Shaykh teaches that "[t]he mobile device 11 may have a display screen capable of displaying user interface elements and/or visual media content." Ex. 1007 ¶ 78. Petitioner also contends that "the media controls interface area includes 'media controls 42,' which are

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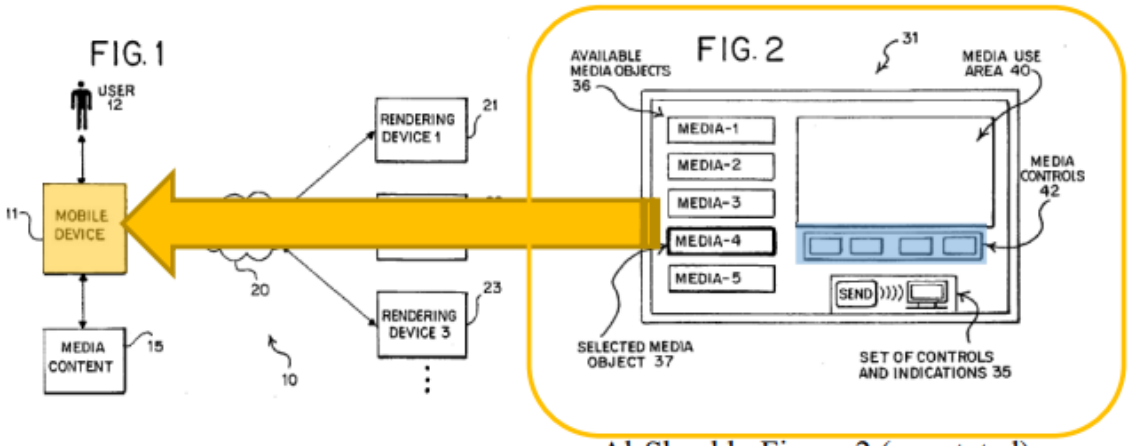
[12] We adopt the parsing of claim 1 used by the parties. *See* Pet. 17; PO Resp. 18.

[13] As indicated *supra*, Petitioner and Patent Owner agreed in the parallel district court litigation to construe "one or more transport controls to control playback" as "one or more user input elements, each enabling control of a respective playback-related function." *See supra* Section II.B. (Claim Construction).

[14] In the Petition, certain text is colored to correspond to colored annotations added to the figures. *See, e.g.*, Pet. 17 (colored text), 19 (colored annotations added to Figures 1 and 2). In quoting the passages in the Petition with colored text, all text coloration outside of the figures in the Petition has been removed.

elements used to 'control rendering of music files on the mobile device 11.'" Pet. 18 (citing Ex. 1007 ¶¶ 78, 88, 92). In cited paragraph 88, Al-Shaykh teaches that, "[t]he media controls 42 may enable the user 12 to control media-related tasks, such as, for example, creation, discovery, selection, organization, management, manipulation and/or rendering of the media content 15." Ex. 1007 ¶ 88. The Petition includes an annotated, combined version of Figures 1 and 2 of Al-Shaykh, reproduced below. Pet. 19.



Al-Shaykh, Figure 1 (annotated) Al-Shaykh, Figure 2 (annotated)

Id. Figure 1 depicts "a system for transferring media content from a mobile device to a home network," and Figure 2 depicts "a user interface of a media application having a set of controls and indications." Ex. 1007 ¶¶ 68–69.

Patent Owner does not dispute the showing in the Petition as to the preamble and this limitation. *See generally* PO Resp.

The cited passages and figures of Al-Shaykh support Petitioner's argument that all the elements of the preamble and this limitation are taught by the cited art. And, the showing in the Petition is undisputed. We find that all the elements of the preamble and this limitation are taught by Al-Shaykh.

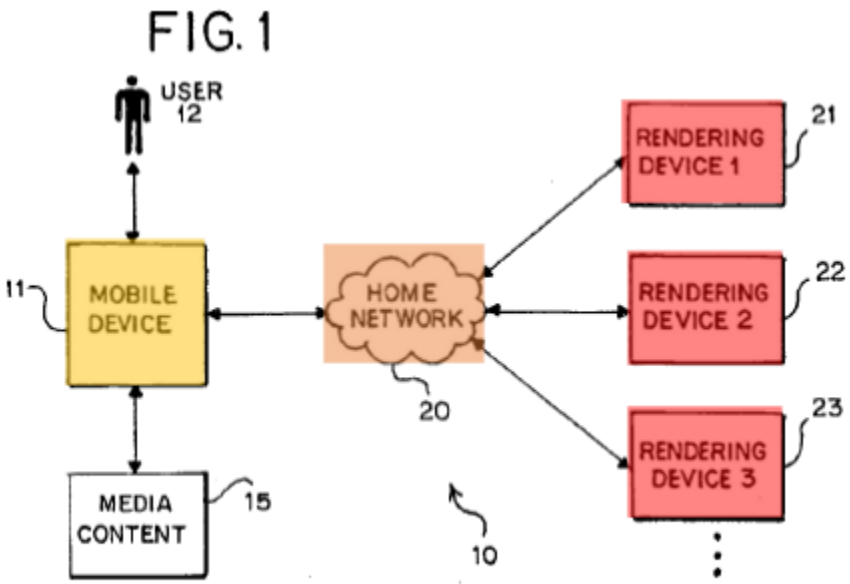
after connecting to a local area network via a network interface, identifying, via the control device, playback

> *devices connected to the local area network;* (referred to by the parties as limitation or element 1-b (*see* Pet. 17; PO Resp. 18))

Petitioner relies on Al-Shaykh as teaching all the elements of this limitation. Pet. 19–22 (citing Ex. 1003 (Bims Decl.) ¶¶ 81–85; Ex. 1007 ¶¶ 4, 5, 34, 77, 78, 80–82, 85, 94, 112, 133, 153, Figs. 1, 6). Petitioner contends:

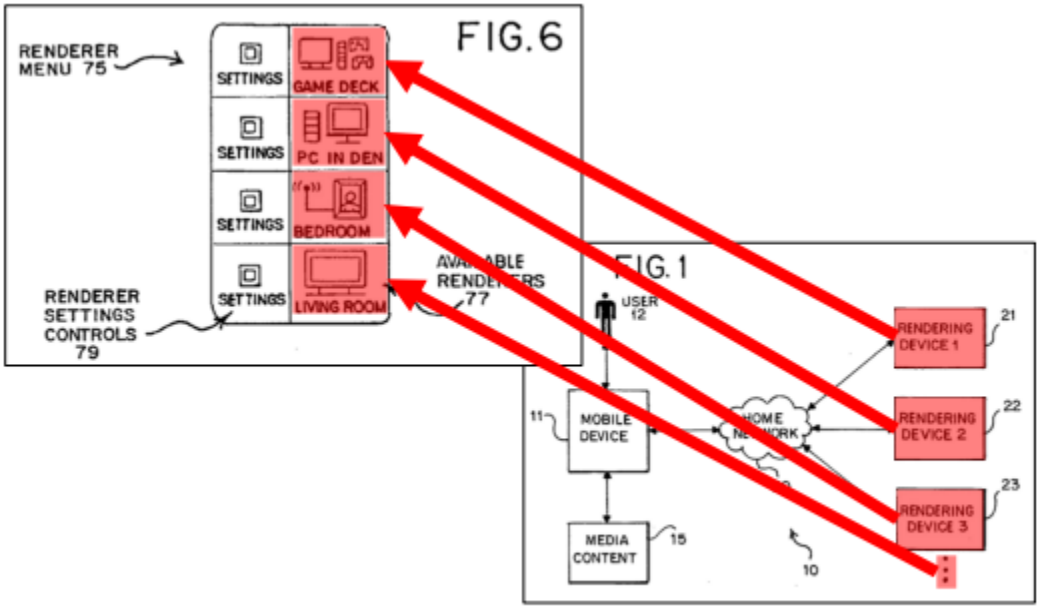
> Al-Shaykh's mobile device connects to a home network 20, such as a "residential local area network," in order to "communicate with one or more available rendering devices." *Id.* at 19–20 (citing Ex. 1007 ¶ 78, Fig. 1).
>
> * * *
>
> Al-Shaykh discloses communicating using . . . local area network protocols for the home network, so the components of Al-Shaykh's mobile devices providing the interface to those networks are network interfaces. *Id.* at 20 (citing Ex. 1007 ¶¶ 4, 5, 77, 78, 80, 82, 94).
>
> * * *
>
> Al-Shaykh's rendering devices include "televisions[s], … stereo[s], … a gaming console[s], a personal computer[s], a laptop PC[s], [] netbook PC[s], and/or the like," and, thus, are playback devices because each of these devices are configured to playback content. *Id.* at 21 (citing Ex. 1007, ¶ 81, Fig. 1).

And, Petitioner provides an annotated version of Figure 1 of Al-Shaykh, reproduced below.



Al-Shaykh, Figure 1 (annotated)

Id. According to Petitioner, the annotated version of Figure 1 depicts that, "[a]fter connecting to the local area network [home network 20], the mobile device [11] communicates with 'rendering devices 21, 22, 23.'" *Id.* And, the Petition includes an annotated version of combined Figures 1 and 6 of Al-Shaykh, reproduced below. *Id.* at 22.



Al-Shaykh, Figure 6 (annotated with elements from Figure 1)

Id. Figure 1 depicts, "a system for transferring media content from a mobile device to a home network," and Figure 6 depicts, "a renderer menu." Ex. 1007 ¶¶ 68, 71.

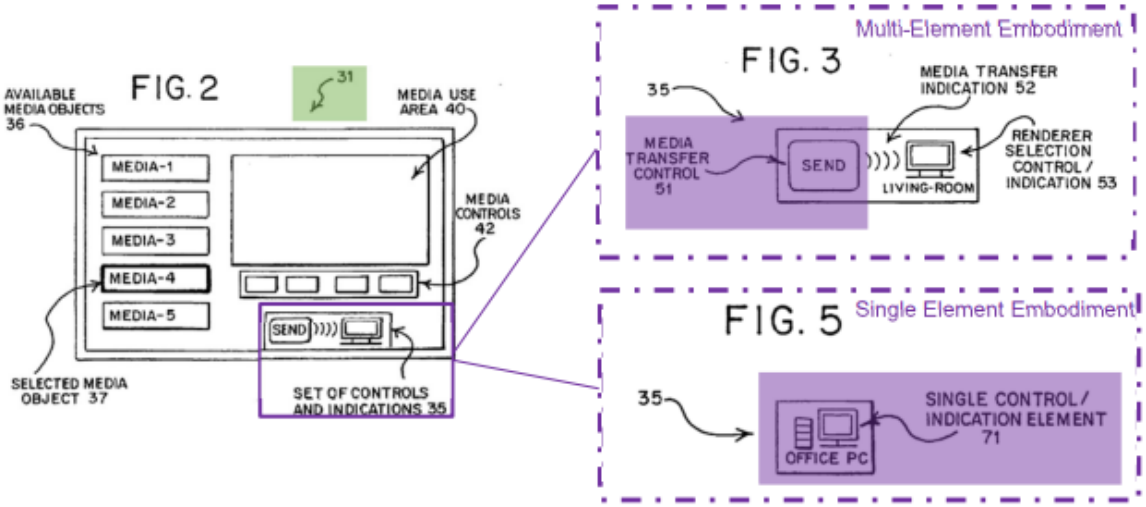
Patent Owner does not dispute the showing in the Petition as to this limitation. *See generally* PO Resp.

The cited passages and figures of Al-Shaykh support Petitioner's argument that all the elements of this limitation are taught by the cited art. And, the showing in the Petition is undisputed. We find that all the elements of this limitation are taught by Al-Shaykh.

> *causing, via the control device, the graphical interface to display a selectable option for transferring playback from the control device;* (referred to by the parties as limitation or element 1-c (*see* Pet. 17; PO Resp. 18))

Petitioner relies on Al-Shaykh as teaching all the elements of this limitation. Pet. 22–24 (citing Ex. 1003 (Bims Decl.) ¶¶ 86–88; Ex. 1007 ¶¶ 89, 100, 115, 120, Figs. 2–5). Petitioner contends: "[t]he 'user interface

31' of Al-Shaykh's mobile device displays a 'set of controls and indications 35 [that] enable the user 12 to enable and/or disable transfer of the media content 15' to a rendering device." *Id.* at 22–23 (citing Ex. 1007 ¶ 89, Fig. 2) (alteration in original). Petitioner provides annotated versions of Figures 2, 3, and 5 of Al-Shaykh, reproduced below. *Id.* at 24.



Al-Shaykh, Figures 2, 3, and 5 (annotated)

Id. Annotated Figures 2, 3, and 5 depict "the mobile device displays media transfer control 51 and control/indication element 71 as selectable options for transferring playback from the control device (i.e., the mobile device) to a rendering device." *Id.* at 23 (citing Ex. 1003 (Bims Decl.) ¶¶ 86-88). The cited passages and figures of Al-Shaykh support Petitioner's argument that all the elements of this limitation are taught by the cited art.

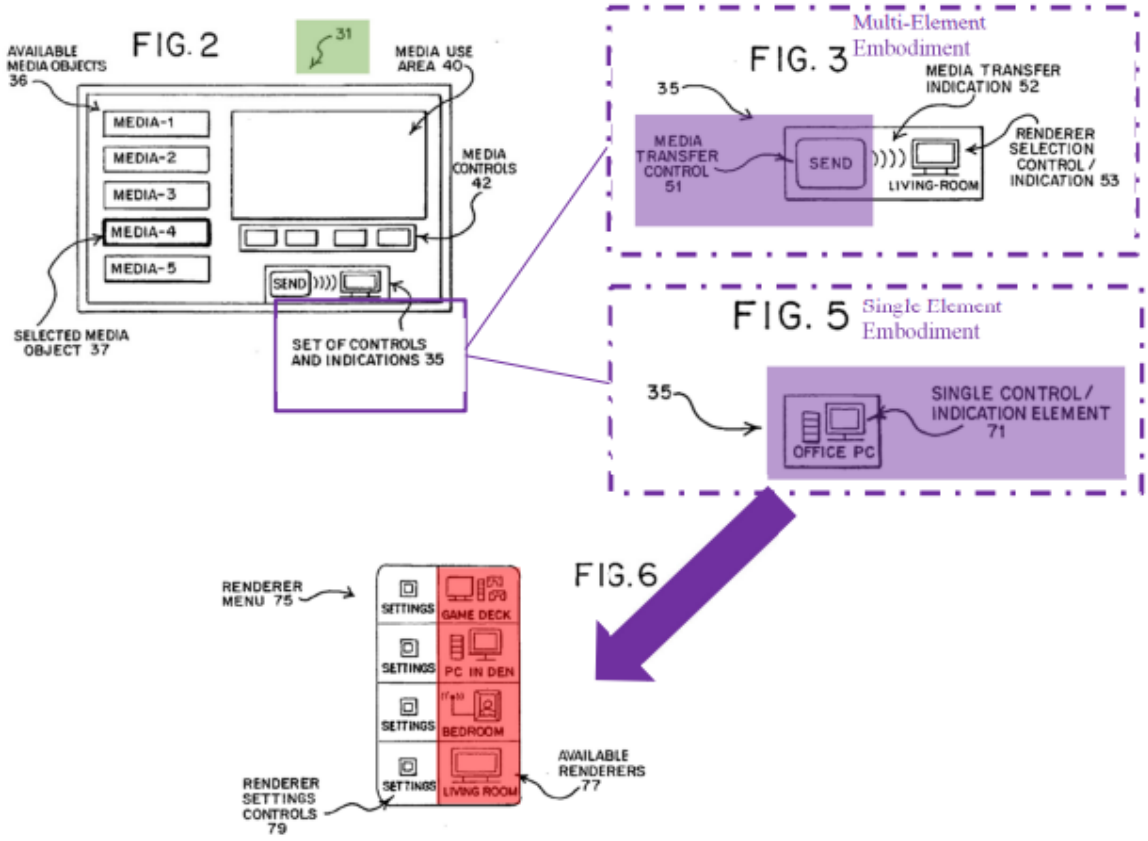
Patent Owner argues that Al-Shaykh fails to teach the "transferring playback" element of this limitation. PO Resp. 31–35. As this argument relates to this limitation and the next two limitations in claim 1 (referred to by the parties as limitations 1-c, 1-d, and 1-e), we discuss Patent Owner's argument below after considering the showing in the Petition as to these three limitations.

> *detecting, via the control device, a set of inputs to transfer playback from the control device to a particular playback device, wherein the set of inputs comprises: (i) a selection of the selectable option for transferring playback from the control device and (ii) a selection of the particular playback device from the identified playback devices connected to the local area network;* (referred to by the parties as limitation or element 1-d (*see* Pet. 17; PO Resp. 18))

Petitioner relies on Al-Shaykh as teaching all the elements of this limitation. Pet. 24–26 (citing Ex. 1003 (Bims Decl.) ¶¶ 89–92; Ex. 1007 ¶¶ 31, 36, 78, 85, 89, 99, 100, 106, 114, 115, 117, 119–121, 133–139, Figs. 2–6). Petitioner contends:

> Al-Shaykh discloses . . . a user selects the selectable option (i.e., media transfer control 51 or control/indication element 71) to "enable and/or disable transfer of the media content 15' to a rendering device. *Id.* at 25 (citing Ex. 1003 ¶ 90).
>
> * * *
>
> After the media transfer control 51 or control/indication element 71 is selected, the mobile device can display a renderer menu 75 with "a list 77 of available rendering devices" for a user to select from. *Id.* (citing Ex. 1003 ¶ 91; Ex. 1007 ¶¶ 106, 117, 120, 121, 133).
>
> * * *
>
> The list enables a user to "select" a particular rendering device from the list of available rendering devices. *Id.* (citing Ex. 1007 ¶ 133).

And, Petitioner provides annotated versions of Figures 2, 3, 5, and 6 of Al-Shaykh, reproduced below. *Id.* at 26.



Id. Petitioner contends that annotated Figures 2, 3, 5, and 6 depict, "in Al-Shaykh's system, a mobile device detects user inputs to transfer playback from the mobile device to a particular rendering device when the user selects the media transfer control 51 or control/indication element 71 followed by a second selection of a particular rendering device from the renderer menu." *Id.* (citing Ex. 1003 ¶ 92). The cited passages and figures of Al-Shaykh support Petitioner's argument that all the elements of this limitation are taught by the cited art.

As noted above, Patent Owner argues that Al-Shaykh fails to teach the "transfer playback/transferring playback" element of this limitation. PO Resp. 31–35. As this argument relates to this limitation, the preceding limitation, and the next limitation in claim 1 (referred to by the parties as

limitations 1-c, 1-d, and 1-e), we discuss Patent Owner's argument below after considering the showing in the Petition as to these three limitations.

> *after detecting the set of inputs to transfer playback from the control device to the particular playback device, causing playback to be transferred from the control device to the particular playback device, wherein transferring playback from the control device to the particular playback device comprises:* (referred to by the parties as limitation or element 1-e (*see* Pet. 17; PO Resp. 18))

Petitioner relies on Al-Shaykh as teaching all the elements of this limitation. Pet. 27 (citing Ex. 1003 (Bims Decl.) ¶¶ 93–94; Ex. 1007 ¶¶ 89, 92, 130). Petitioner contends that Al-Shaykh "discloses that, after detecting the set of inputs, the mobile device causes playback to transfer to the target rendering device." *Id.* (citing Ex. 1007 ¶¶ 89, 92, 130). The cited passages and figures of Al-Shaykh support Petitioner's argument that all the elements of this limitation are taught by the cited art.

As noted above, Patent Owner argues that Al-Shaykh fails to teach the "transfer playback/transferring playback" element of this limitation. PO Resp. 31–35. This argument relates to this limitation and the preceding two limitations in claim 1 (referred to by the parties as limitations 1-c, 1-d, and 1-e). Specifically, Patent Owner contends, "Al-Shaykh discloses techniques 'for ***transferring media content*** from a mobile device to a home network' (Ex.1007, ¶14), which does not amount to 'transferring ***playback***' of 'multimedia content' (i.e., transferring the function of ***rendering*** of the 'multimedia content'), as required by claim 1." *Id.* at 32. However, the passages in Al-Shaykh cited in the Petition make clear that the function of rendering is being transferred. Cited paragraph 92 of Al-Shaykh (Pet. 27) states:

> The user 12 may use the set of controls and indications 35 to enable transfer of the media content 15 from the music player application to a target rendering device of the available rendering devices, such as, for example, the rendering devices 21,22,23. As a result, music files and/or play lists selected, used and/or played in the music player application may ***transfer to the target rendering device for rendering***. The user 12 may use the media controls 42 of the user interface 31 of the music player application to identify, organize, arrange, and/or ***play*** additional music files. As a result, the additional music files may ***transfer from the music player application to the target rendering device for rendering***. . . . The media controls 42 may control ***the rendering of the music files on the target rendering device*** if the transfer of the media content 15 to the target rendering device is enabled using the set of controls and indications 35.

Ex1007 ¶ 92 (emphasis added). Cited paragraph 130 of Al-Shaykh (Pet. 27) states:

> The representation of the target rendering device may flash, may pulsate, may vibrate, may change colors, may move and/or the like to indicate that the media content 15 is transferring to and/or ***rendering on the target rendering device***. For example, the representation of a stereo device may be animated to depict musical notes emanating from the speakers to indicate that the media content 15 is transferring to and/or ***rendering on the stereo device***.

Ex. 1007 ¶ 130 (emphasis added). Patent Owner's argument is also contradicted by the claims of Al-Shaykh. For example, claim 1 of Al-Shaykh recites:

> 1. A method for transferring media content from a mobile device to a home network wherein the mobile device has a user interface and further wherein the home network has rendering devices, the method comprising the steps of:
> displaying a media transfer control, a media transfer indication and a renderer selection control/indication concurrently in the

> user interface of the mobile device during execution of a media application by the mobile device;
> identifying first media content using the media application;
> identifying a first target rendering device of the rendering devices in the home network wherein the renderer selection control/indication identifies the first target rendering device to a user of the mobile device;
> accepting user input on the user interface of the mobile device which selects the media transfer control;
> ***rendering the first media content on the first target rendering device in response to selection of the media transfer control***; and
> indicating to the user of the mobile device that ***the first target rendering device is rendering the first media*** content wherein the media transfer indication indicates to the user of the mobile device that ***the first target rendering device is rendering the first media content***.

Ex. 1007, claim 1 (emphasis added); *see also id.*, claim 17. Thus, Al-Shaykh teaches that it is not "***merely*** transferring content from one device to another" as argued by Patent Owner (PO Resp. 32), but makes clear that it is actually transferring the function of rendering the content. Patent Owner fails to consider (or discuss and distinguish) these passages in Al-Shaykh in making this argument. *See id.* at 31–35.

Patent Owner also argues "Al-Shaykh does not suggest that the 'mobile device' is even in a playback state when it provides the instruction, much less suggest that the 'mobile device' is capable of causing the 'target rendering device' to playback 'media content' being rendered at the 'mobile device' at the time of transfer." PO Resp. 34 (citing Ex. 2018 ¶ 160). Instead, Patent Owner asserts that Al-Shaykh teaches away from a control device "transferring playback" to a playback device because "Al-Shaykh expressly discloses that a prerequisite to 'transfer media content' to a

'rendering device' is that the mobile device's 'internal state' must ***not*** 'be set to 'PLAY[.]'" *Id.* (citing Ex. 1007 ¶132). This argument is based upon an incorrect interpretation of paragraph 132 of Al-Shaykh, which states:

> In an embodiment, the media application may change a state of the media application. The media application may cause one or more of the media controls 42 to be invoked in response to user input, which selects and/or invokes the one or more of the media controls 42 in the set of controls and indications 35. For example, the media application may have an internal state for media playback on the mobile device 11, and/or the internal state may be set to "PLAY" to indicate that media content is playing on the mobile device 11 or set to "PAUSE" to indicate that the media playback is paused on the mobile device 11. The user 12 may enable transfer of the media content to a target rendering device by invoking the media transfer control 51, the media transfer control/indication 61 and/or the single control/indication element 71 when the media application has the internal state set to "PAUSE." In response, the media application may change the internal state from "PAUSE" to "PLAY" and/or may take other actions associated with selection and/or invocation of a "play" control in the media controls 42. As a result, the media application may begin and/or may resume rendering of the media content on the mobile device 11 substantially simultaneously with the transfer to and/or the rendering of the media content on the target rendering device. In a similar fashion, the media application may change the internal state from "PLAY" to "PAUSE" in response to the user 12 disabling the transfer of the media content to the target rendering device by invoking the media transfer control 51, the media transfer control/indication 61 and/or the single control/indication element 71.

Ex. 1007 ¶ 132. This paragraph states the exact opposite of what Patent Owner says it states. Paragraph 132 of Al-Shaykh addresses how the "PLAY/PAUSE" state of the media application may be changed when invoking the media transfer control. If the media application of the mobile

device is set to "PAUSE" when the user invokes the media transfer control to transfer the media content to a target rendering device, the state is changed from "PAUSE" to "PLAY." If the state is set to "PLAY" and the media content is playing on the mobile device, the state is not changed. Stated differently, this paragraph teaches that, when the user invokes the media transfer control, the mobile device is set to "PLAY" and the mobile device continues or begins rendering the media content and then transfers the media content to the target rendering device where it continues to be rendered as set forth in Al-Shaykh. We, therefore, do not agree with Patent Owner's arguments relating to this limitation.

Taking into consideration and weighing all the related arguments and evidence, we find that all the elements of this limitation are taught by Al-Shaykh.

> *causing one or more first cloud servers to add multimedia content to a local playback queue on the particular playback device, wherein adding the multimedia*[15] *content to the local playback queue comprises the one or more first cloud servers adding, to the local playback queue, one or more resource locators corresponding to respective locations of the multimedia content at one or more second cloud servers of a streaming content service;* (referred to by the parties as limitation or element 1-f (*see* Pet. 17; PO Resp. 18))

Petitioner relies on Qureshey (in combination with Al-Shaykh) as teaching the elements of this limitation. Pet. 27–34 (citing Ex. 1003

[15] Petitioner relies on Patent Owner's construction of "multimedia" as "includ[ing] audio only content." Pet. 30–31 n.2; *see also* PO Resp. 19. Petitioner also contends, "[e]ven if 'multimedia' required content constituting more than one type of media (e.g., audio and video), Al-Shaykh discloses playback of such type of content." *Id.* at 31 n.2 (citing Ex. 1007 ¶¶ 3, 4, 84, 160–167).

(Bims Decl.) ¶¶ 95–103; Ex. 1008, 3:34–39, 3:46–47, 7:55–58, 13:8–27, 14:32–47, 16:29–32, 16:56–60, 21:62–65, 22:48–58, 24:26–30, 28:11–43, 35:33–67, 37:22–26 (claim 43), Figs. 6B, 11, 15. Petitioner provides a colored version of Figure 6B of Qureshey, reproduced below. *Id.* at 30.

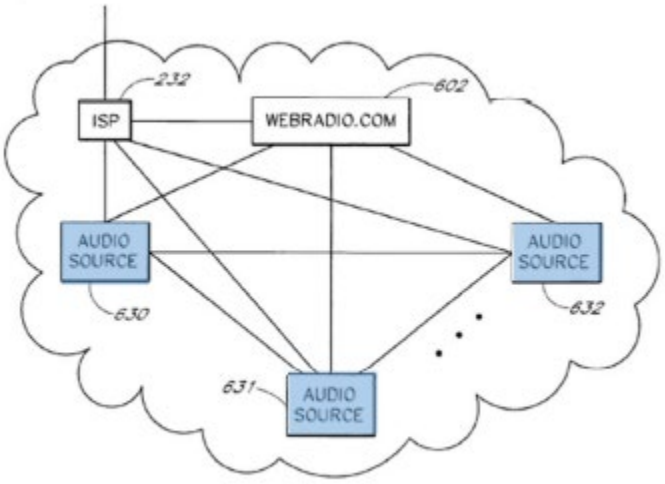


FIG. 6B

Id. Figure 6B depicts the "relationship between the site 602 and other Web sites that supply streaming audio information, such as a site 630, a site 631, and a site 632." Ex. 1008, 14: 32–34. Petitioner also provides a colored version of Figure 11 of Qureshey, reproduced below. *Id.*

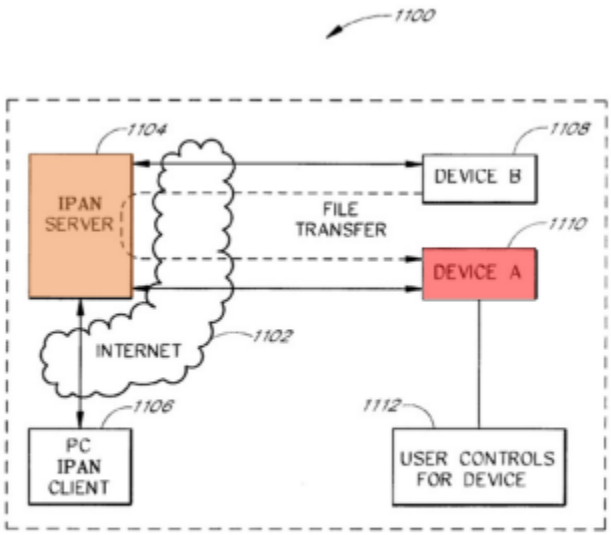


FIG. 11

Id. Figure 11 depicts "an IPAN [Internet Personal Audio Network] 1100 includes an IPAN server 1104, a PC IPAN client 1106, a network 1102, a device B 1108, a device A 1110, and user controls 1112. The PC IPAN client 1106 connects to the IPAN Server 1104 through the network 1102 (such as the Internet)." Ex. 1008, 16:56–60. Petitioner further provides a colored version of Figure 15 of Qureshey, reproduced below. Pet. 28.

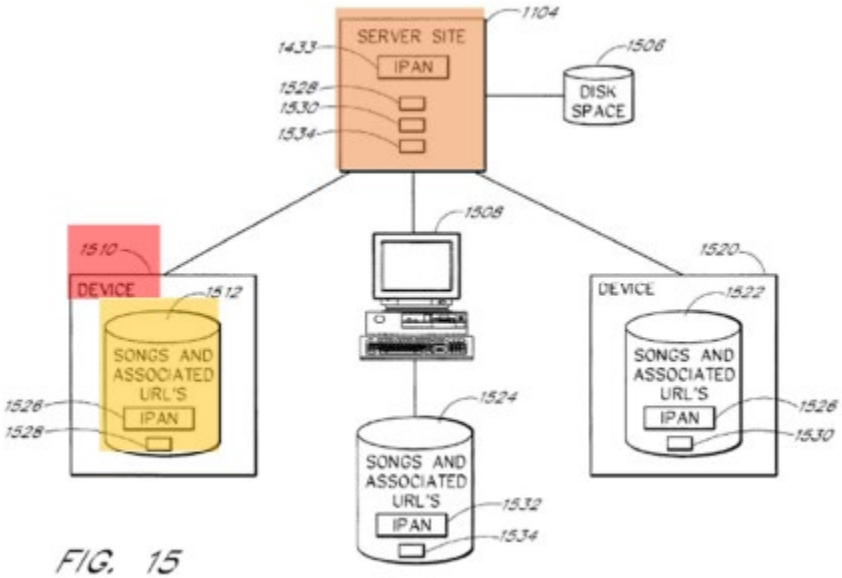


FIG. 15

Id. Fig. 15 depicts "a configuration for assigning playlists and audio sources to a network-enabled audio device 1510 or other devices such as a PC 1508 from a network-enabled audio device 1520 or another device." Ex. 1008, 21:40–43.

Petitioner contends:

> Qureshey's IPAN server 1104 is a *first cloud server* and Qureshey's audio sources 630-632 constitute *second cloud servers of a streaming content service*. Both the IPAN server 1104 and audio sources 630-632 constitute cloud servers because they are remote computing systems that are accessed over the Internet. Pet. 28–29 (citing Ex. 1003 ¶ 97; Ex. 1008, 3:34–39, 13:8–27, 14:32–47, 16:29–31, 16:56–60, Figs. 6B, 11, 15).
>
> * * *
>
> Qureshey discloses a synchronization procedure that causes an IPAN cloud server to add an updated playlist to the storage space 1512 of a network-enabled audio device, wherein the updated playlist includes a list of audio files and Uniform Resource Locators (URLs) corresponding to the location of the audio files in the playlist. *Id.* at 30–31) (citing Ex. 1003 ¶ 98; Ex. 1008, 3:46–47, 7:55–58, 14:32–47, 21:62–65, 22:48–58, 24:26–30, 37:22–26, Figs. 6B, 11, 15) (footnote omitted).
>
> * * *
>
> [T]he network-enabled audio device contains a local playback queue that contains a playlist with URLs and a certain list of media (e.g., list of songs for playback) stored within the storage space 1512. The stored URLs are used for retrieval and playback of the certain list of songs in a particular sequence. *Id.* at 31–32) (citing Ex. 1003 ¶¶ 99, 100; Ex. 1008, 21:43-46, 21:62-67, 28:11-43, 35:33-67)).
>
> * * *
>
> [A] POSA would understand that the storage space 1512 containing a playlist with URLs and a certain list of songs includes a local playback queue with URLs used for both retrieving songs and playing them back in a particular sequence,

> and the list of songs included in the playlist indicates the particular sequence of playback itself. . . . the playlist can store the songs themselves, additionally indicating that Quershey discloses adding multimedia content to a local playback queue. *Id*. at 32) (citing Ex. 1003 ¶¶ 99, 100)).
>
> * * *
>
> [I]n the combined Al-Shaykh-Qureshey system, when a set of inputs to transfer playback from the mobile device to the particular rendering device is detected, as disclosed in Al-Shaykh, then the system would cause a first cloud server (i.e., Qureshey's IPAN server) to add URLs associated with the locations of the audio files to the storage space 1512 (as disclosed in Qureshey) in Al-Shaykh's rendering devices. *Id.* at 33.
>
> * * *
>
> [A] POSA would have been motivated to incorporate the back-end server functionality that enables a rendering device to directly retrieve content from the Internet to play back, as taught by Qureshey, into Al-Shaykh's system, to the extent that Al-Shaykh does not disclose this functionality. *Id.* at 33–34 (citing Ex. 1007 ¶¶ 15, 94, 97; Ex. 1008, 3:34–39, 13:8–27, 14:32–47, 16:29–32, 16:56–60, Figs. 6B, 11, 15).

The cited passages and figures of Qureshey support Petitioner's argument that all the elements of this limitation are taught by the cited art.

Patent Owner criticizes Petitioner's showing with regard to this limitation because, according to Patent Owner, Qureshey relates to transferring playlists not playback queues. Patent Owner argues:

> Qureshey fails to teach "transferring ***playback***," as claimed. Simply put, Qureshey relates to "audio ***file transfers***" and "***distribution of audio files*** over a computer network such as the Internet." As explained, a POSA would understand that ***merely*** transferring audio files is fundamentally different from transferring one device's function of ***rendering*** of content to another device, as claimed.

PO Resp. 45. This argument is misdirected because it attacks Qureshey in isolation and does not consider the presentation in the Petition regarding the combination of Al-Shaykh and Qureshey. As is clear from the Petition, Qureshey only is relied upon "to incorporate the back-end server functionality that enables a rendering device to directly retrieve content from the Internet to play back, as taught by Qureshey, into Al-Shaykh's system, to the extent that Al-Shaykh does not disclose this functionality." Pet. 33–34. This particular limitation does not explicitly recite "transferring playback" and the presentation in the Petition as to "transferring playback" as recited is discussed above in relation to the limitations 1-c, 1-d, and 1-e in which this claim element is recited. In that discussion, Petitioner relies on Al-Shaykh to teach "transferring playback." *See* Pet. 22–27. Patent Owner's argument is unavailing.

Patent Owner next argues that Qureshey fails to teach the two cloud servers recited in this limitation because Petitioner "conflates Qureshey's two alternative 'modes of operation' to make this allegation." PO Resp. 45. According to Patent Owner, "Qureshey discloses an 'intelligent radio device' that can operate in two alternative modes: 'Web Radio mode' and 'playlist mode,'" and asserts that "[a] POSA would not have mixed and matched teachings of these alternative modes of operation." *Id.* at 45–46. In response to this argument, Petitioner contends:

> [Patent Owner's] argument that Qureshey's playlist and Web radio modes of operation are incompatible (POR, 45-47) ignores [Petitioner]'s mapping, which shows that Qureshey's intelligent audio device, when operating in playlist mode, retrieves content from remote sources to stream. Pet., 32; Qureshey, 35:33-67, 1:53-64, 3:5-12. These remote sources include web site audio sources 630-632, which are remote

> computing systems. Pet., 28-29. Thus, [Petitioner]'s mapping does not rely on the Web radio mode.

Pet. Reply 10. Considering these arguments and weighing the evidence presented, we find that, when in the "playlist mode," Qureshey teaches two cloud servers (the IPAN server and a remote server accessed over the Internet using the URLs in the playlist) as recited in this limitation. Otherwise, the URLs would serve no purpose.

And, Patent Owner argues that Qureshey teaches transferring playlists instead of a playback queue (*see* PO Resp. 47–49), because "a given stored 'playlist' is not set to be played by the 'network-enabled audio device' in Qureshey until a user manually selects the given 'playlist' using the interface on the "network-enabled audio device'" (*id.* at 49 (citing Ex.2018 (Schmidt Decl.), ¶ 201)). In response to this argument, Petitioner cites to claim 4 of Qureshey and states, "Qureshey discloses that the audio device is '***adapted to enable playback from [its] data storage device***' and thus the media is 'set to play' from storage space 1512." Pet. Reply 9–10 (alteration in original). We also note that claim 1 of Qureshey from which claim 4 depends recites:

> 1. An electronic device comprising:
> a) a network interface enabling the electronic device to receive an Internet radio broadcast and being further adapted to communicatively couple the electronic device to a central system;
> b) ***a system enabling playback of audio content from a playlist assigned to the electronic device via the central system***; and
> c) a control system associated with the network interface and the system enabling playback of the audio content indicated by the playlist, and adapted to:
> i) enable a user of the electronic device to select a desired mode of operation from a plurality of modes of operation comprising an Internet radio mode of operation

and a playlist mode of operation;
ii) receive and play the Internet radio broadcast when the desired mode of operation is the Internet radio mode of operation; and
iii) ***when the desired mode of operation is the playlist mode of operation***:
receive the playlist assigned to the electronic device from the central system, the playlist identifying a plurality of songs, wherein ones of the plurality of songs are not stored on the electronic device;
receive information from the central system enabling the electronic device to obtain the ones of the plurality of songs from at least one remote source;
obtain the ones of the plurality of songs from the at least one remote source; and
play the audio content indicated by the playlist.

Ex. 1008, 34:6–35 (emphasis added). We find that Qureshey teaches enabling the playback of the playlists stored in a data storage device. Thus, Patent Owner's argument is not supported by Qureshey.

With regard to combining the relevant teachings of Al-Shaykh and Qureshey, the Petition alleges the following motivations:

> Al-Shaykh and Qureshey are in the same field of endeavor, deal with similar devices, and are directed to solving the same problems in those devices. Pet. 14 (citing Ex. 1003 (Bims Decl.) ¶ 72).
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> A POSA would also have been motivated to combine these references to develop an improved GUI for control devices in a multimedia playback network. Pet. 15 (citing Ex. 1003 (Bims Decl.) ¶ 73).
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> [A] POSA would have been motivated to incorporate the back-end server functionality that enables a rendering device to directly retrieve content from the Internet to play back, as taught by Qureshey, into Al-Shaykh's system, to the extent that Al-Shaykh does not disclose this functionality. . . . Al-Shaykh's

> rendering devices can directly retrieve media content from a remote server for playback but Al-Shaykh does not explain the details on the back-end functionality that facilitates this transaction. . . . A POSA would have looked to similar references in the art for further disclosures of networked playback systems to determine how playback devices within the systems are able to directly retrieve content from remote sources, and, thus, a POSA would have found it obvious to combine Al-Shaykh and Qureshey in this way. Pet. 33–34 (citing Ex. 1003 (Bims Decl.) ¶¶ 102–103; Ex. 1007 (Al-Shaykh) ¶¶ 15, 94, 97; Ex. 1008 (Qureshey), 3:34-39, 13:8-27, 14:32-47, 16:29-32, 16:56-60, Figs. 6B, 11, 15).
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> Both Al-Shaykh and Qureshey disclose "one or more second cloud servers of a streaming content service" and, thus, Qureshey's second cloud server (i.e., audio sources 630-632) do not need to be incorporated into the Al-Shaykh-Qureshey combination. However, this similarity is another reason that a POSA would modify Al-Shaykh with Qureshey. Pet. 33 fn.3.
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> [A] POSA would have been motivated to implement Qureshey's back-end server functionality to improve the system by preventing any disconnection or failure of a mobile control device to impact ongoing playback on the rendering device. . . . That is, the added functionality enables storage of URLs on the rendering device such that the rendering device can retrieve the content to be played back without assistance from the mobile control device. . . . Such a combination would improve the user experience by minimizing playback stoppages at the rendering device. Pet. 34 (citing Ex. 1003 (Bims Decl.) ¶ 103).

The Petition clearly articulates why a skilled artisan would have been motivated to combine the relevant teachings of Al-Shaykh and Qureshey by providing specific reasoning based on facts in the record and logic.

Patent Owner attacks Petitioner's showing with regard to motivation to combine Al-Shaykh and Qureshey for a number of reasons. *See* PO

Resp. 26–31, 35–44. First, Patent Owner argues that "[Petitioner]'s high-level reasons – including that they are 'in the same field of endeavor,' 'deal with similar devices,' and are directed to solving the 'same' or 'similar' problems (Petition, 14-16) – are simply too generic and conclusory and evidence [Petitioner]'s impermissible hindsight bias." PO Resp. 26. But the Supreme Court's decision in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007) addressing motivation to combine contains language that undermines this argument. The Supreme Court said, "[A]ny need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *KSR*, 550 U.S. at 420. And, "if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." *KSR*, 550 U.S. at 417.

The contentions in the Petition that "Al-Shaykh and Qureshey are in the same field of endeavor, deal with similar devices, and are directed to solving the same problems in those devices" (Pet. 14) are well-supported by citations to Al-Shaykh and Qureshey and the Declaration of Dr. Bims. *Id.* at 14–16 (citing Ex. 1003 ¶¶ 72–77; Ex. 1007, Abstract, ¶¶ 4, 5, 11, 53, 78, 80, 82, 87, 90, 92, Fig. 1; Ex. 1008, code (57) (Abstract), 1:16–33, 1:27–52, 1:65–2:13, 2:16–33, 2:58–3:4, 3:57–4:3, 16:29–17:31, 21:40–23:5, 24:31–43, Figs. 11, 15, 17B). Patent Owner does not directly address or persuasively counter Petitioner's arguments and evidence that Al-Shaykh and Qureshey are in the same field of endeavor, deal with similar devices, and are directed to solving the same problems in those devices. *See* PO

Resp. 26–31. However, in discussing these aspects of Petitioner's showing as to motivation to combine, Patent Owner repeatedly acknowledges that Qureshsey's system and approach were well-known. *Id.* at 27–29 (describing Qureshsey's system and approach as well-known five times). There is a motivation to combine when a known technique 'has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way' using the 'prior art elements according to their established functions.'" *Intel Corp. v. Pact XPP Schweiz AG*, No. 2022-1037, slip. op. at 12 (Fed. Cir. Mar. 13, 2023) (quoting *KSR*, 550 U.S. at 417, and *Intel Corp. v. Qualcomm Inc.*, 21 F. 4th 784, 799–800 (Fed. Cir. 2021). We disagree with Patent Owner's arguments that Petitioner has relied on improper hindsight in combining the relevant teachings of Al-Shaykh and Qureshey, because (1) Petitioner's reasons for combining these teachings are well-founded in the particular teachings of these references as shown in the Petition, and (2) the functionality from Qureshey that Petitioner adds to the teachings of Al-Shaykh is well-known to a skilled artisan (as acknowledged by Patent Owner). Based on this record, we find that Al-Shaykh, and Qureshey are in the same field of endeavor, deal with similar devices, and are directed to the solving the same or similar problems, and that these findings support the further finding that a skilled artisan would be motivated to look to Qureshey to improve Al-Shaykh's rendering devices by allowing them to retrieve media content directly from a remote server for playback.

We have also considered Patent Owner's other arguments (s*ee* PO Resp. 35–44) relating to combining the specific functionality recited in limitation 1-f as taught by Qureshey with the relied-upon teachings of Al-

Shaykh as discussed in the Petition and set forth above, and we find that the reasons provided in the Petition support finding that a skilled artisan would be motivated to combine the relevant teachings of Al-Shaykh and Qureshey. Specifically, we find that a skilled artisan "would have been motivated to incorporate the back-end server functionality that enables a rendering device to directly retrieve content from the Internet to play back, as taught by Qureshey, into Al-Shaykh's system, to the extent that Al-Shaykh does not disclose this functionality" as argued by Petitioner. Pet. 33–34. The Petition states:

> Al-Shaykh's rendering devices can directly retrieve media content from a remote server for playback but Al-Shaykh does not explain the details on the back-end functionality that facilitates this transaction. A POSA would have looked to similar references in the art for further disclosures of networked playback systems to determine how playback devices within the systems are able to directly retrieve content from remote sources, and, thus, a POSA would have found it obvious to combine Al-Shaykh and Qureshey in this way.

Id. at 34 (citations omitted). As noted above, Patent Owner acknowledges that Qureshey's system and approach were well-known. *See* PO Resp. 27–29. Patent Owner asserts various reasons why modifying Al-Shaykh to incorporate the functionality of this limitation was unnecessary and would not have improved Al-Shaykh. *See* PO Resp. 35–44. But, Petitioner's combination of teachings relating to devices and functions that were known in the art is well-supported. Moreover, it is not necessary for Petitioner to show a combination is the best option, only that it is a suitable option. *Intel*, 21 F.4th at 800.

We find that Qureshey teaches this limitation and that a skilled artisan would have been motived to combine the relevant teachings of Al-Shaykh and Qureshey to include all the elements recited in this limitation.

> *causing playback at the control device to be stopped; and* (referred to by the parties as limitation or element 1-g (*see* Pet. 17; PO Resp. 18))

Petitioner relies on Al-Shaykh as teaching all the elements of this limitation. Pet. 35–36 (citing Ex. 1003 (Bims Decl.) ¶¶ 121–123; Ex. 1007 ¶¶ 53, 93, 100, 156, 157, 166, 167, 173, 174). The Petition states:

> Al-Shaykh discloses the functionality required to stop playback at the mobile device when playback is transferred to the particular rendering device. Specifically, Al-Shaykh discloses transferring playback from an initial rendering device to a new rendering device. Al-Shaykh, [0156-57], [0166- 67], [0173-74]. When transfer occurs, "rendering of the music content on the initial target rendering device may be stopped, and … the rendering of music content on the new target rendering device may begin." Similarly, when rendering from the mobile device is transferred to the target rendering device, the rendering at the mobile device is stopped. *See id.*, [0174], [0157] (the user may transfer playback back from the rendering device to the mobile device by invoking the media transfer control 51 or control/indication element 71 a second time). Thus, a POSA would find Al-Shaykh renders obvious that a mobile device stops playback when playback is transferred to the particular rendering device. Bims, ¶ 106.

Id. at 35–36. As noted above, Petitioner presents an alternative argument that Phillips teaches this limitation. *See* Pet. 13, 37 ("To the extent Patent Owner disagrees that Al-Shaykh and Qureshey (Ground I) teaches this limitation, Phillips also discloses this limitation.") (citing Ex. 1003 (Bims Decl.) ¶¶ 112–120). In this regard, the Petition states:

> Phillips discloses *causing playback at the control device to be stopped*, as recited . . . Specifically, Phillips discloses transferring content from a "mobile device 20" to a "desired renderer 14" and, "once transfer is complete, display of the video content at the mobile device 20 is terminated." *Id.*, 10:48-61; 7:28:42; Bims, ¶ 113.
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> Further . . . Al-Shaykh discloses transferring playback to a particular rendering device. The teachings of Phillips can be implemented to Al-Shaykh's system when transfer of playback to a particular rendering device is complete. Specifically, when Al-Shaykh's system completes the transfer of playback to a particular rendering device, it would terminate the display of content at the mobile device, as Phillips teaches. Bims, ¶ 114.

Id. at 37. The cited passages and figures of Al-Shaykh and Phillips support Petitioner's argument that this limitation is taught by the cited art.

Patent Owner argues that Al-Shaykh teaches the opposite of the function recited in limitation 1-g because it teaches starting playback on the mobile device upon transferring the media content to a target rendering device. Specifically, Patent Owner argues:

> Al-Shaykh discloses the exact opposite function required by [this] limitation . . . . . Instead of "causing playback at the control device to be stopped" as part of "transferring playback," Al-Shaykh's "mobile device" begins (and/or resumes) rendering the "media content" after transferring the "media content." Ex.1007, ¶132. Specifically, Al-Shaykh discloses, in response to "enabl[ing] transfer of the media content to a target rendering," "the media application [of the mobile device] may begin and/or may resume rendering of the media content on the mobile device 11 substantially simultaneously with the transfer to and/or the rendering of the media content on the target rendering device." *Id.*

PO Resp. 50 (emphases in original omitted). Patent Owner cites paragraph 132 of Al-Shaykh in support of this argument. *Id.* This argument is based

upon an incorrect interpretation of paragraph 132 of Al-Shaykh, which states:

> In an embodiment, the media application may change a state of the media application. The media application may cause one or more of the media controls 42 to be invoked in response to user input, which selects and/or invokes the one or more of the media controls 42 in the set of controls and indications 35. For example, the media application may have an internal state for media playback on the mobile device 11, and/or the internal state may be set to "PLAY" to indicate that media content is playing on the mobile device 11 or set to "PAUSE" to indicate that the media playback is paused on the mobile device 11. The user 12 may enable transfer of the media content to a target rendering device by invoking the media transfer control 51, the media transfer control/indication 61 and/or the single control/indication element 71 when the media application has the internal state set to "PAUSE." In response, the media application may change the internal state from "PAUSE" to "PLAY" and/or may take other actions associated with selection and/or invocation of a "play" control in the media controls 42. As a result, the media application may begin and/or may resume rendering of the media content on the mobile device 11 substantially simultaneously with the transfer to and/or the rendering of the media content on the target rendering device. In a similar fashion, the media application may change the internal state from "PLAY" to "PAUSE" in response to the user 12 disabling the transfer of the media content to the target rendering device by invoking the media transfer control 51, the media transfer control/indication 61 and/or the single control/indication element 71.

Ex. 1007 ¶ 132. This paragraph states the exact opposite of what Patent Owner says it states. Paragraph 132 of Al-Shaykh addresses how the "PLAY/PAUSE" state of the media application may be changed when invoking the media transfer control. If the media application of the mobile device is set to "PAUSE" when the user invokes the media transfer control

to transfer the media content to a target rendering device, the state is changed from "PAUSE" to "PLAY." If the state is set to "PLAY" and the media content is playing on the mobile device, the state is not changed. Stated differently, this paragraph teaches that, when the user invokes the media transfer control, the mobile device is set to "PLAY" in all instances and the mobile device continues or begins rendering the media content and then transfers the media content to the target rendering device where it continues to be rendered.

As disclosed in the paragraphs of Al-Shaykh that Petitioner cites for this limitation (*see* Pet. 35–36 (citing Ex. 1007 ¶¶ 156, 157, 166, 167, 173, 174)), Al-Shaykh stops rendering of the media content on the device currently rendering the media content when the media content is transferred to a new rendering device. Our understanding of the disclosure of Al-Shaykh in this regard is confirmed by paragraphs 104–106 of Dr. Bims's Declaration that state:

> 104. It is my opinion that Al-Shaykh discloses transferring playback from the control device to the particular playback device further comprising causing playback at the control device to be stopped (e.g., enabling transfer of media content to rendering device stops playback at the mobile device). Al-Shaykh, [0100], [0053], [0093], [0156-57], [0166-67], [0173-74].
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> 105. As explained in Section X.A.2.e, Al-Shaykh discloses transferring playback from the control device to the particular playback device. Further, a POSA would understand that transferring playback "enable[s] a user to use the mobile device to start and stop external rendering of the media content currently selected in a media application executed by the mobile device." *Id.*, [0053]. Specifically, a POSA would, in my opinion, recognize that invoking media transfer control 51 or control/indication element 71 (as explained in Section X.A.2.c) enables or disables the transfer of media content to the

> rendering device. *Id.*, [0100]. Al-Shaykh explicitly notes that disabling causes "the target rendering device [to] stop rendering the media content 15." *Id.* Thus, it is my opinion that a POSA would understand that enabling the transfer of media content to the rendering device would cause the mobile to stop playback.
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> 106. Additionally, it is my opinion that Al-Shaykh discloses the functionality required to stop playback at the mobile device when playback is transferred to the particular rendering device. Specifically, a POSA would recognize that Al-Shaykh discloses transferring playback from an initial rendering device to a new rendering device. *Id.*, [0156-57], [0166-67], [0173-74]. When transfer occurs, "rendering of the music content on the initial target rendering device may be stopped, and … the rendering of music content on the new target rendering device may begin." Similarly, when rendering from the mobile device is transferred to the target rendering device, the rendering at the mobile device is stopped. *Id.*, [0174], [0157] (the user may transfer playback back from the rendering device to the mobile device by invoking the media transfer control 51 or control/indication element 71 a second time). Thus, a POSA, in my opinion, would find Al-Shaykh renders obvious that a mobile device stops playback when playback is transferred to the particular rendering device.

Ex. 1003 ¶¶ 104–106 (alterations in original). We credit the testimony of Dr. Bims on this particular issue and find it is well-supported by Al-Shaykh. We disagree with Patent Owner's arguments relating to this limitation and Al-Shaykh and, instead, we find that Al-Shaykh teaches this limitation.

With regard to the combinations of references including Phillips, Patent Owner does not dispute that Phillips teaches this limitation. However, Patent Owner does dispute whether Petitioner has shown a motivation to combine Phillips and Al-Shaykh. PO Resp. 53–58. Petitioner contends that, "[a] POSA would have been motivated to and would have found it obvious to add Phillips's functionality to Al-Shaykh's system for

several reasons." Pet. 37 (citing Ex. 1003 (Bims Decl.) ¶ 115). In this regard, the Petition states:

> Al-Shaykh and Phillips are in the same field of endeavor, deal with similar devices, and are directed to solving the same problems in those devices. *Id.* at 38 (citing Ex. 1003 (Bims Decl.) ¶ 116).
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> [B]oth references enable users to transfer playback to various devices and playback content on those devices from the Internet, which provides much greater accessibility to content than traditional systems that were limited to playback of content locally stored on the network. *Id.* (citing Ex. 1006, 3:18–42; Ex. 1007 ¶ 90).
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> [B]oth references describe networked media playback systems that include a control device and one or more rendering devices. *Id.* (citing Ex. 1003 (Bims Decl.) ¶ 117); Ex. 1006, Fig. 11 (showing renderers 14 and mobile device 20 in a LAN 18); Ex. 1007, code (57) (Abstract), ¶ 78, Fig. 1 (showing mobile device 11 and rendering devices 21, 22, 23 in home network 20).
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> Al-Shaykh and Phillips involve similar media playback systems that are often used in homes or offices and allow users the flexibility of playing content on various device configurations for different scenarios. *Id.* at 38–39 (citing Ex. 1006, 1:19-34); Ex. 1007 ¶ 5) ("the user may render the music content on a high quality stereo in the home instead of being limited to playback using the mobile device.").
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> Al-Shaykh and Phillips disclose methods to seamlessly transfer playback of media content from a control device to a playback device without delay and in a manner that the user can still control playback and conduct other tasks from the control device. *Id.* at 39 (citing Ex. 1006, 1:19-34; Ex. 1007 ¶ 53).

* * *

> These media playback systems provide a more affordable option that mixes expensive control devices with low-cost rendering devices and improves the user's video watching experience at home by providing the flexibility of seamlessly using the rendering devices. *Id.* (citing Ex. 1006, 1:19-34; Ex. 1007 ¶ 4).

* * *

> [A] POSA would have been motivated to incorporate terminating playback at the mobile device when playback is transferred to rendering device, as taught by Phillips, into Al-Shaykh's system, to the extent that Al-Shaykh does not disclose this functionality. . . . [A] POSA would at least have looked to similar references in the art for further disclosures of networked playback systems to determine what occurs at the mobile device when playback is transferred to a rendering device. . . . Moreover, a POSA would have been motived to implement this functionality, as described in Phillips, because it improves the system by allowing users to perform other tasks on their mobile phone while playback continues on the rendering device. *Id.* at 39–40 (citing Ex. 1003 (Bims Decl.) ¶¶ 119–120; Ex. 1006, 7:28-42; Ex. 1007 ¶¶ 15, 94, 97).

The Petition clearly articulates why a skilled artisan would have been motivated to combine the relevant teachings of Al-Shaykh and Phillips by providing specific reasoning based on facts in the record and logic.

In response, Patent Owner argues that, "[a] POSA, however, would not have been motivated to combine Al-Shaykh with Phillips in the manner proposed by [Petitioner] for several reasons." PO Resp. 53 (citing Ex 2018 (Schmidt Decl.) ¶ 273). Patent Owner argues that the "high level reasons" ("Al-Shaykh and Phillips are in the same field of endeavor, deal with similar devices, and are directed to solving the same problems in those devices." (Pet. 38)) provided in the Petition "as it did for Al-Shaykh and Qureshey . . .

fail for the same reasons discussed before." PO Resp. 53. As discussed above with regard to Al-Shaykh and Qureshey, we find these reasons to be valid and supported by the evidence of record.

Patent Owner also argues that there is no motivation to combine Al-Shaykh and Phillips, because Al-Shaykh allegedly does not disclose "transferring playback." PO Resp. 55. For reasons discussed above with respect to limitation 1-c, 1-d, and 1-e, we disagree with this argument because Al-Shaykh teaches this claim element.

Similarly, Patent Owner argues that there is no motivation to combine Al-Shaykh and Phillips, because Al-Shaykh allegedly does not disclose stopping rendering on the mobile device when the media content is transferred to a rendering device. PO Resp. 56–57. For the reasons discussed above with respect to limitation 1-g, we disagree with this argument because Al-Shaykh alone or in combination with Phillips teaches this claim element.

Considering all the arguments and evidence of the parties on the issue of motivation to combine Al-Shaykh and Phillips, we find that a skilled artisan would have been motivated to combine the relevant teachings of Al-Shaykh and Phillips. And, we find that Al-Shaykh alone or in combination with Phillips teach "causing playback at the control device to be stopped" as recited.

> *modifying the one or more transport controls of the control interface to control playback by the playback device; and* (referred to by the parties as limitation or element 1-h (*see* Pet. 17; PO Resp. 18))

Petitioner relies on Al-Shaykh as teaching all the elements of this limitation. Pet. 40–41 (citing Ex. 1003 (Bims Decl.) ¶¶ 104–106; Ex. 1007 ¶¶ 53, 93, 100, 156, 157, 166, 167, 173, 174). The Petition states:

> Al-Shaykh further discloses that the same media controls 42 that are configured to control playback of the mobile device are configured to control playback of the rendering device. Al-Shaykh, [0092], [0172], [0013], [0162] . . . A POSA would understand that the media controls on user interface 31 must be modified in order for the same media controls to be configured to control playback in both modes (i.e., a first mode where playback is at the mobile device and a second mode where playback is transferred to the rendering device). Bims, ¶ 123. Specifically, when playback is transferred from the mobile device to the rendering device, the media controls must be modified in order to change the command operation such that use of one of the media controls the operation of the rendering device and not the mobile phone. *Id.*

Id. at 41. The cited passages of Al-Shaykh support Petitioner's argument that all the elements of this limitation are taught by the cited art.

Patent Owner's entire response with regard to this limitation is "Al-Shaykh and Qureshey fail to teach [this] limitation . . . for at least the reason that neither reference teaches 'transferring ***playback***.'" PO Resp. 58. As noted above with respect to limitations 1-c, 1-d, and 1-e, we find Al-Shaykh teaches "transferring playback" as recited and we further find that Al-Shaykh teaches this limitation.

> *causing the particular playback device to play back the multimedia content, wherein the particular playback device playing back the multimedia content comprises the particular playback device retrieving the multimedia content from one or more second cloud servers of a streaming content service and playing back the retrieved multimedia content.* (referred to by the parties as limitation or element 1-i (*see* Pet. 17; PO Resp. 18))

Petitioner contends that both Al-Shaykh and Qureshey teach all the elements of this limitation. Pet. 41–45 (citing Ex. 1003 (Bims Decl.) ¶¶ 124–131; Ex. 1007 ¶¶ 6, 15, 20, 82, 90, 92–95, 97, Fig. 1; Ex. 1008, 2:40–46, 4:62–64, 14:32–47, 21:62–65, 24:17–30, 35:33–36:3, Fig. 6B). With regard to Al-Shaykh, the Petition states:

> Al-Shaykh discloses "rendering [] media content on the target rendering device." Pet. 42 (citing Ex. 1007 ¶¶ 15, 97) (alteration in original).
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> Al-Shaykh discloses a "remote content service" that provides devices access to stream media content from the internet using, for example, a "service-specific" or "media" application. . . . Al-Shaykh further discloses a "remote content provider" that directly transmits the media content to the devices. . . . Thus, Al-Shaykh's remote content provider transmitting content accessible from a remote content service would constitute a second cloud server of a streaming content service because Al-Shayk's system comprises a remote computing system that is accessed over the Internet. *Id.* at 43 (citing Ex. 1003 ¶ 127; Ex. 1007 ¶¶ 6, 20, 80, 82, 90, 92, 93, 95, Fig. 1).
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> Al-Shaykh further discloses that the particular rendering device can directly retrieve media content to playback without the media content originating from or flowing through the mobile device 11. *Id.* at 44 (citing Ex. 1003 ¶ 129; Ex. 1007 ¶¶ 94, 95).

With regard to Qureshey, the Petition states:

> Qureshey discloses a networked-enabled audio device (also referred to as an electronic device) that retrieves audio content from a remote source and plays it back. Pet. 44 (citing Ex. 1003, ¶¶ 129–131; Ex. 1008, 2:40–46, 4:62–64, 14:32–47, 35:33-36:3, Fig. 6B).
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> [T]he networked-enabled audio device stores a playlist that includes URLs that indicate the location of audio files. . . . the remote source that audio files can be retrieved from are audio sources 630-632 that constitute second cloud servers of a streaming content service. *Id.* at 45 (citing Ex. 1008, 21:62-65, 22:48-58, 24:17-30).

The cited passages and figures of Al-Shaykh and Qureshey support Petitioner's argument that all the elements of this limitation are taught by the cited art.

Patent Owner argues that neither Al-Shaykh nor Qureshey teach this limitation. PO Resp. 58–61. With regard to Al-Shaykh, Patent Owner argues that "[Petitioner] fails to establish that Al-Shaykh teaches 'the ***particular playback device*** retrieving the multimedia content ***from one or more second cloud servers***" as recited, because the media content is not directly transmitted from the remote content provider to the target rendering device and, instead, is relayed through the mobile device. *Id.* at 59–60. This argument is contradicted by Al-Shaykh, which states, "if the 'media in context' in the media application is not stored locally on the mobile device 11, the media content may or ***may not*** flow through the mobile device 11 if the transfer of the media content to a target rendering device is enabled using the set of controls and indications 35." Ex. 1007 ¶ 94 (emphasis added). We, therefore, disagree with Patent Owner's argument.

With regard to Qureshey, Patent Owner argues that "[Petitioner] fails to establish that the claimed '***control device***' is capable of '***causing the particular playback device to play back the multimedia content***' as recited." PO Resp. 60. But, as Petitioner correctly points out, "[a] plain reading of claim 1 shows that this is not required." Pet. Reply 21. Petitioner also argues that "Qureshey's 'PC Device' (control device) causes the audio device to playback content because the PC device facilitates the synchronization procedure for updating the playlist with URLs stored at the audio device, which the audio device then uses to retrieve content for playback." *Id.* at 21–22 (citing Ex. 1008, claim 16); *see also* Pet. 30–31, 44–45. We agree with Petitioner on both points and, therefore, we disagree with Patent Owner's argument.

In the Petition, Petitioner relies on its previous showing, discussed above with respect to limitation 1-f, relating to motivation to combine Al-Shaykh and Qureshey. Pet. 45. In response, Patent Owner argues that "[Petitioner] provides no specific reason why a POSA would have been motivated to combine Al-Shaykh and Qureshey to achieve [this] limitation." PO Resp. 59. Petitioner replies:

> To the extent Al-Shaykh does not sufficiently disclose this limitation, a POSA would have sought other references, like Qureshey, to understand how the rendering devices would retrieve content from remote cloud sources. Pet., 45, 33-34. Implementing Qureshey's method for remotely storing content to be retrieved via URL by the rendering device would beneficially avoid disruptions from disconnection or failure at the mobile device during playback at the rendering device. *Id.*

Pet. Reply 22. For the same reasons set forth above with respect to limitations 1-f, we find that a skilled artisan would have been motivated to

combine the relevant teachings of Al-Shaykh and Qureshey as recited in this limitation.

Summary for Claim 1

For the reasons set forth above, we find that Petitioner has established by a preponderance of the evidence that all the limitations of claim 1 are taught or suggested by (1) a combination of Al-Shaykh and Qureshey; and (2) a combination of Al-Shaykh, Qureshey, and Phillips. We also find that Petitioner has established by a preponderance of the evidence that a skilled artisan would have been motivated to combine the teachings of (1) Al-Shaykh and Qureshey; and (2) Al-Shaykh, Qureshey, and Phillips. Accordingly, we conclude that claim 1 is unpatentable as obvious in view of (1) a combination of Al-Shaykh and Qureshey; and (2) a combination of Al-Shaykh, Qureshey, and Phillips.

2. Independent Claims 13 and 25

Independent claims 13 and 25 are also challenged as obvious based on (1) a combination of Al-Shaykh and Qureshey; and (2) a combination of Al-Shaykh, Qureshey, and Phillips. Pet. 2, 45–49. The parties agree that independent claims 13 and 25 are substantially similar to independent claim 1. Pet. 45 ("Independent claims 13 and 25 are substantially similar to claim 1."); PO Resp. 18 ("[Patent Owner] agrees that claims 13 and 25 are substantially similar to claim 1."). And, neither party has suggested to us any material differences between independent claims 1, 13, and 25 that are relevant to our analysis. *See* Pet. 45–49; PO Resp. 61.

For the reasons set forth above for claim 1, we find that Petitioner has established by a preponderance of the evidence that all the limitations of claims 13 and 25 are taught or suggested by (1) a combination of Al-Shaykh

and Qureshey; and by (2) a combination of Al-Shaykh, Qureshey, and Phillips. We also find that Petitioner has established by a preponderance of the evidence that a skilled artisan would have been motivated to combine the teachings of (1) Al-Shaykh and Qureshey; and (2) Al-Shaykh, Qureshey, and Phillips. We conclude that claims 13 and 25 are unpatentable as obvious in view of (1) a combination of Al-Shaykh and Qureshey; and (2) a combination of Al-Shaykh, Qureshey, and Phillips.

3. Dependent Claims 6–12, 18–24, and 27–29

Dependent claims 6–12, 18–24, and 27–29 are also challenged as obvious based on (1) a combination of Al-Shaykh and Qureshey; and (2) a combination of Al-Shaykh, Qureshey, and Phillips. Pet. 2, 49–57. Patent Owner contends that these challenges fail for the reasons argued by it with regard to claim 1. PO Resp. 61–62. We disagree with those arguments for the reasons stated above in analyzing the challenges to claim 1. Patent Owner presents additional arguments with respect to certain dependent claims, which we address separately in our analysis of the challenges to dependent claims 6–12, 18–24, and 27–29 is set forth below.

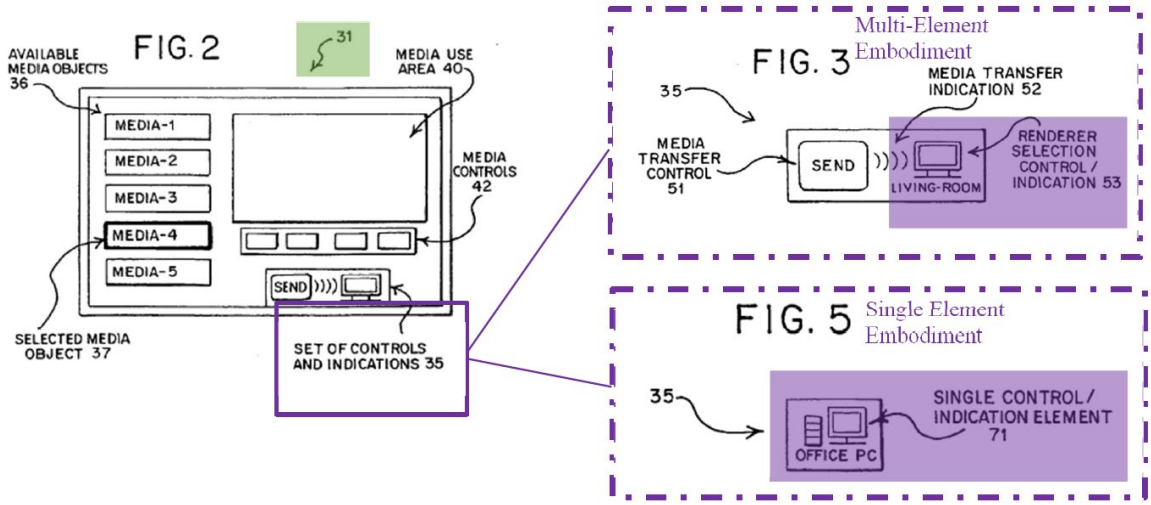
Claim 6

Claim 6 recites:

> 6. *The method of claim 1, further comprising detecting, via the control device, a set of inputs to transfer playback from the playback device back to the control device, wherein transferring playback from the playback device back to the control device comprises:*
>
> *causing playback at the playback device to be stopped; and*
>
> *modifying the one or more transport controls of the control interface to control playback by the control device.*

Ex. 1001, 18:66–19:8.

Petitioner relies on Al-Shaykh for teaching or suggesting all the additional limitations set forth in claim 6. *See* Pet. 49–52 (citing Ex. 1003 (Bims Decl.) ¶¶ 138–143; Ex. 1007 ¶¶ 31, 36, 85, 89, 99, 100, 114, 115, 119–121, 157, 166, 167, 173, 174, Figs. 2–5). In support of its contentions for claim 6, the Petition provides combined and annotated Figures 2, 3, and 5 of Al-Shaykh, reproduced below.



Pet. 50. Figure 2 depicts "a user interface of a media application having a set of controls and indications," and Figures 3 and 5 depict "sets of controls and indications." Ex. 1007 ¶¶ 69–70. The Petition states:

> After playback is transferred to the rendering device, a user can again invoke media transfer control 51 or control/indication element 71 on "user interface 31" to disable the transfer to the playback device and effectively transfer playback back to the mobile device. *Id.* Thus, Al-Shaykh discloses *detecting, via the control device, [an input] to transfer playback from the playback device back to the control device. See Bims, ¶ 139.*
>
> * * *
>
> Al-Shaykh discloses that, when "the user 12 [] invoke[s] the media transfer control 51 [or control/indication element 71] in the user interface 200 to disable the transfer of the media content 15 to the target rendering device … the target rendering

> device may stop rendering the media content 15." Al-Shaykh, [0157], [0166-67], [0173-74].
>
> Further, the media controls 42 that controlled playback at the rendering device when playback was transferred to the rendering device also control playback when playback is at the mobile device. . . . [A] POSA would understand that the media controls 42 must again be modified in order for the same media controls that control playback at the rendering device when transfer was enabled to also control playback at the mobile device when transfer is disabled. *See* Bims, ¶¶142-143.

Pet. 49–50, 51–52. The cited passages and figures in Al-Shaykh support Petitioner's contentions as to claim 6.

Patent Owner argues that Petitioner fails to establish that Al-Shaykh teaches "a set of inputs to transfer playback from the playback device back to the control device," as recited in claim 6. PO Resp. 62. Specifically, Patent Owner argues:

> [Petitioner] asserts that Al-Shaykh's input to "***disable*** the transfer to the playback device" amounts to a set of inputs to "***transfer playback*** from the playback device ***back to the control device***," as recited in claim 6. Petition, 51. However, a POSA would have understood that Al-Shaykh's input to "disable the transfer to the playback device" merely stops the transfer of "media content" from Al-Shaykh's "mobile device" to the "target rendering device," such that the "mobile device" no longer relays the "media content" directly to the "target rendering device" or facilitates the retrieval of "media content." Ex.2018, ¶¶242-43.

Id. In reply, Petitioner contends that "Al-Shaykh discloses this limitation because it discloses invoking media transfer control 51 or control/indication element 71 to disable the transfer of playback to the rendering device and revert playback back to the mobile device." Pet. Reply 23. Petitioner's arguments and evidence on this issue are well-supported by Al-Shaykh

because media transfer control 51 or control/indication element 71 constitute a set of inputs that are capable of transferring playback from the target rendering device back to the mobile device. Considering the arguments and weighing the evidence, we find that the preponderance of the evidence establishes that all the elements of claim 6 are taught by the cited art. Accordingly, we conclude that claim 6 is unpatentable as obvious in view of (1) a combination of Al-Shaykh and Qureshey; and (2) a combination of Al-Shaykh, Qureshey, and Phillips.

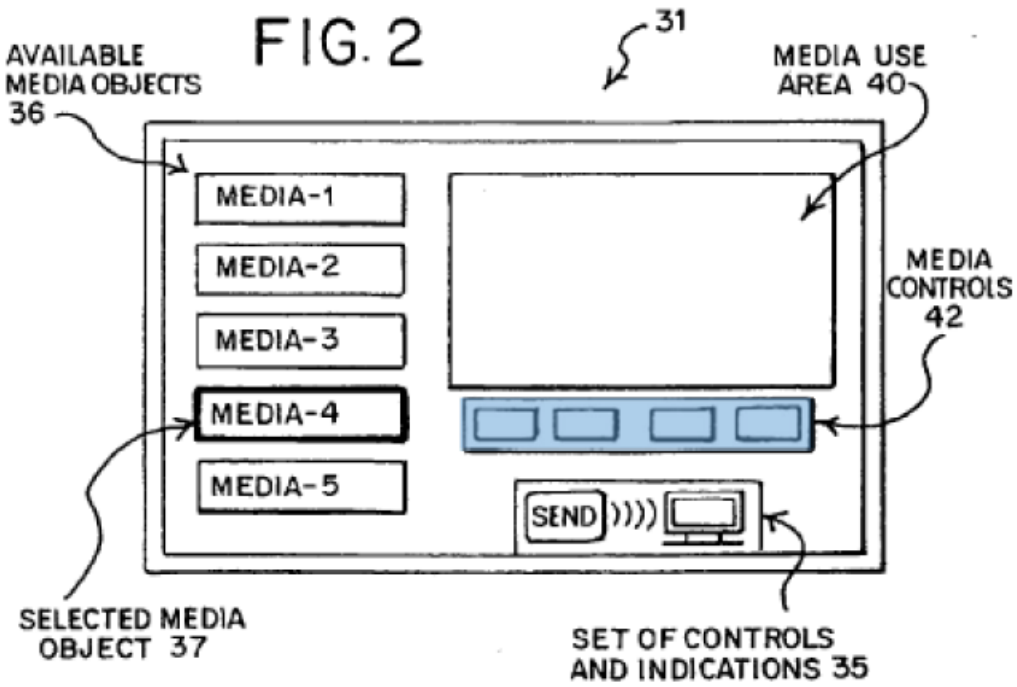
Claim 7

Claim 7 recites:

> 7. *The method of claim 1, wherein causing the graphical interface to display the control interface including one or more transport controls to control playback by the control device comprises causing the graphical interface to display a control interface that includes the one or more transport controls in a particular arrangement on the graphical interface, and wherein modifying the one or more transport controls of the control interface to control playback by the particular playback device comprises causing the graphical interface to display the one or more transport controls to control playback by the particular playback device in the particular arrangement.*

Ex. 1001, 19:9–21.

Petitioner relies on Al-Shaykh for teaching or suggesting all the additional limitations set forth in claim 7. *See* Pet. 52–54 (citing Ex. 1003 (Bims Decl.) ¶¶ 144–147; Ex. 1007 ¶ 92, Fig. 2). In support of its contentions for claim 7, the Petition provides an annotated version of Figure 2 of Al-Shaykh, reproduced below.



Pet. 53. Figure 2 depicts "a user interface of a media application having a set of controls and indications." Ex. 1007 ¶ 69. The Petition states:

> Al-Shaykh discloses *causing the graphical interface to display the control interface including one or more transport controls to control playback by the control device* . . . . Further, the media controls 42 (i.e., the claimed transport claims) are placed as a module underneath the media use area 40 as shown in Figure 2 and, thus, the media controls 42 are in a particular arrangement.
>
> * * *
>
> Al-Shaykh discloses *modifying the one or more transport controls of the control interface to control playback by the particular playback device* and that the same media controls 42 used to control playback of the mobile device are also used to control playback at the rendering device when playback is transferred to the rendering device. Regardless of what type of playback control is active, the media controls 42 are in the same particular arrangement, as shown by Figure 2.

Pet. 52, 53–54. The cited passages and figure in Al-Shaykh support Petitioner's contentions as to claim 7. Patent Owner does not dispute

Petitioner's showing as to the additional elements of claim 7. We find that the preponderance of the evidence establishes that all the elements of claim 7 are taught by the cited art. Accordingly, we conclude that claim 7 is unpatentable as obvious in view of (1) a combination of Al-Shaykh and Qureshey; and (2) a combination of Al-Shaykh, Qureshey, and Phillips.

Claim 8

Claim 8 recites:

> 8. *The method of claim 1, wherein causing the one or more first cloud servers to add multimedia content to the local playback queue comprises causing an identifier of the multimedia content to be added to the local playback queue, wherein the identifier indicates a particular source of the multimedia content at the one or more second cloud servers of the streaming content service, wherein the particular playback device receives the multimedia content from the particular source at the one or more second cloud servers of the streaming content service.*

Ex. 1001, 19:22–31.

Petitioner relies on the combination of Al-Shaykh and Qureshey for teaching or suggesting all the additional limitations set forth in claim 8. *See* Pet. 54–55 (citing Ex. 1003 (Bims Decl.) ¶¶ 148–149; Ex. 1008, 10:64–11:2, 14:32–47, Figs. 3A, 6B). The Petition states:

> Qureshey discloses *causing the one or more first cloud servers to add multimedia content to the local playback queue* and *multimedia content at the one or more second cloud servers of the streaming content service* . . . . *See* Bims, ¶ 148. Qureshey's playlist includes URLs and an identifier that indicates the audio source for the content to be played back. Qureshey, 10:64-11:2, 14:32-47, Figs. 3A, 6B.
>
> * * *
>
> Al-Shaykh and Qureshey (Grounds I and III) disclose . . . a method, *wherein the particular playback device receives the*

> *multimedia content from the particular source at the one or more second cloud servers of the streaming content service*, as recited . . . . Specifically, Qureshey discloses this limitation, as explained [above in relation to claim 1] . . . . *See* Bims, ¶ 149.

Pet. 54–55. The cited passages and figures in Qureshey support Petitioner's contentions as to claim 8. Patent Owner does not dispute Petitioner's showing as to the additional elements of claim 8. We find that the preponderance of the evidence establishes that all the elements of claim 8 are taught by the cited art. Accordingly, we conclude that claim 8 is unpatentable as obvious in view of (1) a combination of Al-Shaykh and Qureshey; and (2) a combination of Al-Shaykh, Qureshey, and Phillips.

Claim 9

Claim 9 recites:

> 9. *The method of claim 1, wherein causing one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device comprises sending a message to the streaming content service that causes the one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device.*

Ex. 1001, 19:32–38.

Petitioner relies on the combination of Al-Shaykh and Qureshey for teaching or suggesting all the additional limitations set forth in claim 9. *See* Pet. 55 (citing Ex. 1003 (Bims Decl.) ¶¶ 150–151; Ex. 1007 ¶¶ 6, 90, 95). The Petition states:

> Al-Shaykh discloses *sending a message to the streaming content service*. . . . a user provides a set of inputs to transfer playback to the rendering devices. These user inputs are provided on a "service-specific application on the mobile device," which is associated with the "remote [media] content service" disclosed in Al-Shaykh. Al-Shaykh, [0006], [0090],

> [0095]. Thus, the user inputs result in sending a message to the remote content service that is associated with the service-specific application. Bims, ¶ 151. . . . the inputs cause the one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device in the Al-Shaykh-Qureshey combined system.

Pet. 55. The cited passages in Al-Shaykh support Petitioner's contentions as to claim 9.

Patent Owner argues that Petitioner fails to establish that Al-Shaykh "teaches the claimed 'message' that is sent from the 'control device' to the 'streaming content service' and 'causes the one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device,' as required by claim 9." PO Resp. 62. Specifically, Patent Owner argues:

> Simply put, Al-Shaykh discloses three different approaches in which "media content" is transferred from a "mobile device" to a "target rendering device," and none of them involve the message required by claim 9. . . . Ex.2018, ¶252. Google's assertion to the contrary is unsupported by Al-Shaykh. Petition, 55. Google points to Al-Shaykh's "service-specific application on a mobile device" associated with a "remote content service," but such general disclosure simply does not amount to the specific functionality required by claim 9. Ex.2018, ¶¶253-56.

Id. at 63. In reply, Petitioner argues

> [Patent Owner's] only counterargument is that Al-Shaykh's "three different approaches" do not disclose the claimed "message." POR, 62-63. Not only does this improperly ignore critical disclosures of Al-Shaykh . . . but it also fails to appreciate that Al-Shaykh discloses receiving inputs at a "service-specific application" on the mobile device, which is "designed to provide access to media content from one or more

> associated content services." Pet., 55 (citing Al-Shaykh, [0006], [0090], [0095]).

Pet. Reply 24. We agree with Petitioner. Petitioner's arguments and evidence on this issue are well-supported by Al-Shaykh because it discloses a service-specific application on the mobile device that is capable of accessing media content from a remote media content service. Ex. 1007 ¶¶ 6, 95. According to Dr. Bim, Al-Shaykh's disclosure of a user interacting with the service-specific application on the mobile device in order to access the remote media content service (e.g., a streaming content service) would include "sending message to the streaming content service." Ex. 1003 ¶ 151. We credit this particular testimony because it is consistent with Al-Shaykh's disclosure. Considering the arguments and weighing the evidence, we find that the preponderance of the evidence establishes that all the elements of claim 9 are taught by the cited art. Accordingly, we conclude that claim 9 is unpatentable as obvious in view of (1) a combination of Al-Shaykh and Qureshey; and (2) a combination of Al-Shaykh, Qureshey, and Phillips.

Claim 10

Claim 10 recites:

> 10. *The method of claim 1, wherein detecting the set of inputs comprises detecting a selection of the multimedia content.*

Ex. 1001, 19:39–41.

Petitioner relies on Al-Shaykh for teaching or suggesting the additional limitation set forth in claim 10. *See* Pet. 56 (citing Ex. 1003 (Bims Decl.) ¶ 152; Ex. 1007 ¶ 86, Fig. 2). The Petition states:

> Al-Shaykh discloses a user interface that allows for a user to provide a set of inputs . . . . *See* Bims, ¶152. Further, Al-Shaykh discloses a user interface 31 that includes available media content that a user can select. Al-Shaykh, [0086] ("the user interface 31 of the media application may display a selected symbolic representation 37 for one or more selected media objects."), Fig. 2 (element 36 and element 37). A POSA would have understood that a user would select content to play before or after selecting a selectable option to transfer playback and selecting a particular playback device. Bims, ¶152. Thus, Al-Shaykh discloses a set of user inputs that includes a selection of media content.

Pet. 56. The cited passages and figure in Al-Shaykh support Petitioner's contentions as to claim 10. Patent Owner does not dispute Petitioner's showing as to the additional elements of claim 10. We find that the preponderance of the evidence establishes that all the elements of claim 10 are taught by the cited art. Accordingly, we conclude that claim 10 is unpatentable as obvious in view of (1) a combination of Al-Shaykh and Qureshey; and (2) a combination of Al-Shaykh, Qureshey, and Phillips.

Claim 11

Claim 11 recites:

> 11. *The method of claim 1, wherein detecting the set of inputs comprises detecting an input that causes playback at the control device to be stopped.*

Ex. 1001, 19:42–44.

Petitioner relies on Al-Shaykh for teaching or suggesting the additional limitation set forth in claim 11. *See* Pet. 56–57 (citing Ex. 1003 (Bims Decl.) ¶ 153; Ex. 1007 ¶ 92). The Petition states:

> Al-Shaykh discloses a user interface that allows for a user to provide a set of inputs. . . . Further, Al-Shaykh discloses media controls 42 that include a "pause" control to stop playback of

> content. Al-Shaykh, [0092]. These media controls control playback of content at the mobile device. . . . A POSA would understand that a user may pause content before or after selecting a selectable option to transfer playback and selecting a particular playback device. Bims, ¶153. Thus, Al-Shaykh discloses a set of user inputs that includes a selection of media content.

Pet. 56–57. The cited passage in Al-Shaykh support Petitioner's contentions as to claim 11.

Patent Owner argues that "[Petitioner]'s assertion that "a user may pause content… ***after*** selecting a selectable option to transfer playback and selecting a particular playback device" (Petition, 56-57) does not satisfy claim 11." PO Resp. 63. In reply, Petitioner argues that "Al-Shaykh discloses media controls 42 with a 'pause' control to stop playback at the mobile device, which [Patent Owner] admits can occur." Pet. Reply 24. Petitioner's arguments and evidence on this issue are well-supported by Al-Shaykh. Patent Owner's argument to contrary is predicated on incorrect interpretation of paragraph 132 of Al-Shaykh, which we addressed above with respect to limitations 1-e and 1-g. *See* Ex. 1007 ¶ 132. Considering the arguments and weighing the evidence, we find that the preponderance of the evidence establishes that all the elements of claim 11 are taught by the cited art. Accordingly, we conclude that claim 11 is unpatentable as obvious in view of (1) a combination of Al-Shaykh and Qureshey; and (2) a combination of Al-Shaykh, Qureshey, and Phillips.

Claim 12

Claim 12 recites:

> 12. *The method of claim 1, wherein detecting the set of 45 inputs comprises detecting selection of a button on the*

control interface.

Ex. 1001, 19:45–47.

Petitioner relies on Al-Shaykh for teaching or suggesting the additional limitation set forth in claim 12. *See* Pet. 57 (citing Ex. 1003 (Bims Decl.) ¶¶154–155; Ex. 1007 ¶¶ 107, 121). The Petition states, "Al-Shaykh discloses detecting a set of inputs. . . . Further, Al-Shaykh discloses that the media transfer control 51 or control/indication element 71 'may be presented as a touchable button' that is selected to transfer playback." Pet. 57. The cited passages in Al-Shaykh support Petitioner's contentions as to claim 12. Patent Owner does not dispute Petitioner's showing as to the additional elements of claim 12. We find that the preponderance of the evidence establishes that all the elements of claim 12 are taught by the cited art. Accordingly, we conclude that claim 12 is unpatentable as obvious in view of (1) a combination of Al-Shaykh and Qureshey; and (2) a combination of Al-Shaykh, Qureshey, and Phillips.

Claims 18–24 and 27–29

The Petition states, "[c]laims 18-24 are substantively identical to claims 6-12, respectively, and the prior art references teach claims 18-24 for the reasons discussed above," and "[c]laims 27-29 are substantively identical to claims 10-12, respectively, and the prior art references teach claims 27-29 for the reasons discussed above. Pet. 57 (citing Ex. 1003 (Bims Decl.) ¶156). Patent Owner also relies on its arguments for claims 6–12 to rebut Petitioner's explanation and supporting evidence for claims 18–24 and 27–29. PO Resp. 63. For the reasons discussed above with regard to claims 6–12, we find that the preponderance of the evidence establishes that all the elements of claims 18–24 and 27–29 are taught by the cited art.

Accordingly, we conclude that claims 18–24 and 27–29 are unpatentable as obvious in view of (1) a combination of Al-Shaykh and Qureshey; and (2) a combination of Al-Shaykh, Qureshey, and Phillips.

F. Obviousness of Claims 2 and 14

Petitioner contends that dependent claims 2 and 14 of the '615 patent are unpatentable as obvious over the combined teachings of (1) Al-Shaykh, Qureshey, and Ramsay and (2) Al-Shaykh, Qureshey, Phillips, and Ramsay. Pet. 57–69. Our analysis of these challenges to claims 2 and 14 is set forth below.

Claim 2

Claim 2 recites:

> 2. *The method of claim 1, wherein detecting the set of inputs to transfer playback from the control device to the particular playback device comprises detecting a set of inputs to transfer playback from the control device to a particular zone of a media playback system that includes the particular playback device as a first channel of a stereo pair and an additional playback device as a second channel of the stereo pair, wherein modifying the one or more transport controls of the control interface to control playback by the particular playback device comprises causing the one or more transport controls of the control interface to control playback by the particular playback device and the additional playback device, and wherein the particular playback device playing back the retrieved multimedia content comprises the particular playback device and the additional playback device playing back the multimedia content as the stereo pair.*

Ex. 1001, 18:13–29. Claim 14 is substantively identical to claim 2. *See id.* at 20:28–44; *see also* Pet. 69 ("Claim[ ] 14 is substantively identical to claim 2."). [16]

[16] While not directly addressing whether claims 2 and 14 are substantively identical, Patent Owner presents its arguments regarding these claims

Petitioner relies on Ramsay for teaching or suggesting all the additional limitations set forth in claim 2. *See* Pet. 64–69 (citing Ex. 1003 (Bims Decl.) ¶¶ 173–180; Ex. 1009, 4:59–5:62, 11:38–47, 18:29–41, 22:25–63, Figs. 1, 4B, 17). The Petition states:

> Ramsay discloses a personal computer that controls playback at a "wireless speaker set 101c" that includes two individually controllable wireless speakers and is within a networked playback system. The speaker set "operate[es] as a stereo pair (i.e. one speaker renders and plays back a left channel signal, the other a right channel signal)." The speaker set can be within a particular zone, such as a bedroom. Pet. 65 (citing Ex. 1003 (Bims Decl.) ¶¶ 173–175; Ex. 1009, 4:59–5:62, 22:25–63, Figs. 1, 17).
>
> * * *
>
> Ramsay's wireless speaker set is a particular zone within a media playback system, wherein the zone includes two playback devices that act as a stereo pair. Further, a POSA would have been motivated to and would have found it obvious to replace Al-Shaykh's rendering devices with Ramsay's wireless speaker sets and zones. *Id.* at 66 (citing Ex. 1003 (Bims Decl.) ¶ 175).
>
> * * *
>
> Ramsay discloses adjusting playback controls 400 that are found on Ramsay's control interface in a manner that controls both speakers in the wireless speaker set. *Id.* at 67 (citing Ex. 1003 (Bims Decl.) ¶¶ 176–178; Ex. 1009, 11:38-47 ("region 411 allows a user to select between one or more available groups, zones and/or individual speakers to control … the control interface under consideration is able to be used to control a plurality of speakers/groups/zones, a by way of region 411 the user is able to select which of those is to be controlled at a given time"), 18:29-41, Fig. 4B).

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together. *See* PO Resp. 64–67. And, neither party has suggested to us any material differences between claims 2 and 14 that are relevant to our analysis. *See* Pet. 64–69; PO Resp. 64–67.

* * *

> [A] POSA would have been motivated to and would have found it obvious to replace Al-Shaykh's rendering devices with Ramsay's wireless speaker sets and zones. *Id.* at 67, 69 (citing Ex. 1003 (Bims Decl.) ¶ 178–180).

Pet. 65–68. The cited passages in Ramsay support Petitioner's contentions as to claim 2.

Patent Owner relies on its arguments previously presented and discussed above with respect to claim 1 in contending that Ramsay does not teach or suggest all the limitations recited in claim 2. *See* PO Resp. 67–68. For the same reasons discussed above with respect to claim 1, these arguments fail.

Petitioner further contends that "[a] POSA would have been motivated to and would have found it obvious to replace Al-Shaykh's rendering devices with Ramsay's wireless speaker sets (e.g., stereo pairs) and speaker zones (Pet. 61 (citing Ex. 1003 (Bims Decl.), ¶¶ 168-172)), because:

> Al-Shaykh and Ramsay are in the same field of endeavor, deal with similar devices, and are directed to solving the same problems in those devices. *Id.* at 61 (citing Ex. 1003 (Bims Decl.) ¶ 169; Ex. 1007 ¶¶ 2, 85, 88; Ex. 1009, code (57) (Abstract), 1:6–17, 5:61–6:47, 11:37–47, 20:8–19, 22:25–63, Figs. 4B, 11).
>
> * * *
>
> [B]oth references enable users to control playback to various devices and playback content on those devices. Ramsay further discloses its wireless speakers to have storage space to upload information onto the speakers, such as relevant files. Thus, Ramsay is compatible with the functionality added from Qureshey to Al-Shaykh's system. *Id.* at 62 (citing Ex. 1009, 9:14-42).
>
> * * *

> Both Al-Shaykh and Ramsay describe networked media playback systems that include a control device and one or more rendering devices. *Id.* (citing Ex. 1003 (Bims Decl.) ¶ 170; Ex. 1007 ¶ 78, Fig. 1 (showing mobile device 11 and rendering devices 21, 22, 22, 23 in home network 20); Ex. 1009, Figs. 1, 2A, 2B, 2C (showing a wireless web-enabled control device 108 and wireless speaker set 101c comprised of wireless speakers 101a and 101b).4B, 11)).
>
> * * *
>
> Al-Shaykh and Ramsay involve similar media playback systems that are often used in homes or offices and allow users the flexibility of playing content on various device configurations for different scenarios. Ramsay describes additional configuration options for a user to choose from, such as playing back content on a set of speakers that act as a stereo pair or across multiple speaker zones in a house. Qureshey also describes similar systems and devices. *Id.* at 62–63 (citing Ex. 1003 (Bims Decl.) ¶ 169; Ex. 1007 ¶¶ 5 ("the user may render the music content on a high quality stereo in the home instead of being limited to playback using the mobile device."); Ex. 1009, 5:61-62, 6:30-47, 11:37-47, 20:8-19, 22:25-64, Fig. 4B, 11, 17).
>
> * * *
>
> Al-Shaykh and Ramsay disclose methods to allow users enhanced flexibility to control playback at playback devices in desired arrangements or configurations that can provide, for example, higher quality playback or playback across regions in synchrony. Ramsay provides additional flexibility to allow users to control playback on a set of stereo speakers, which provide an immersive music experience and surround sound capability. Alternatively, Ramsay also allows users the flexibility to control playback on speakers in different zones in a house, which increases the playback coverage to the user's desire. *Id.* at 63–64 (citing Ex. 1003 (Bims Decl.) ¶¶ 171–172; Ex. 1007 ¶¶ 53, 138; Ex. 1009, 5:61–62, 6:30-47, 11:37–47, 20:8–19, 22:25–63, Figs. 4B, 11, 17).

Pet. 61–64. The Petition clearly articulates why a skilled artisan would have been motivated to combine the relevant teachings of Al-Shaykh and Ramsay by providing specific reasoning based on facts in the record and logic.

Patent Owner presents many of the same arguments against the combinations asserted with respect to claims 2 and 14 as it presented against the combinations asserted for the other challenged claims. We again find these arguments not to be as persuasive as Petitioner's multi-faceted and well-supported contentions as to why there exists a motivation to combine Al-Shaykh and Ramsay.

Patent Owner also argues that "Al-Shaykh and Ramsay are directed toward solving ***different*** problems involving fundamentally different technologies." PO Resp. 64 (citing Ex. 2018 (Schmidt Decl.) ¶ 294). In support, the Patent Owner contends:

> Al-Shaykh is generally directed to "transferring media content" from a "mobile device" to a single "rendering device." Ex.1007, ¶¶7, 77. On the other hand, Ramsay does not contemplate "transferring" media content from one device to another. Ex.2018, ¶294. Instead, Ramsay focuses on providing a "control interface" and implementing "playback control commands" for a "networked media playback device" or a "networked media playback system." *Id.*

Id. at 64–65. Considering the competing contentions of the parties, we find that Petitioner's contentions are better supported by the cited art. Patent Owner's contentions that Al-Shaykh and Ramsay are directed toward solving different problems and involve fundamentally different technologies are not well-supported or persuasive. While, in contrast, Petitioner's contentions that these references deal with similar devices and are directed to solving the same problems in those devices are well-supported and

convincing. As one example, Al-Shaykh and Ramsey appear to address similar technology because each reference enables users to control playback to various devices. *Compare* Ex. 1007 ¶ 2, *with* Ex. 1009, 1:7–13.

And, the remainder of Patent Owner's arguments raise concerns regarding the combination of the particular elements and functionality of the cited art together into a single device. *See* PO Resp. 65–67. But the proper test is not whether the devices disclosed in the cited art may be bodily incorporated, but whether the claimed inventions would have been rendered obvious by the teachings of the cited art. *Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1381 (Fed. Cir. 2016).

For the reasons discussed above, we find that a skilled artisan would have been motivated to combine the relevant teachings of (1) Al-Shaykh, Qureshey, and Ramsay; and (2) Al-Shaykh, Qureshey, Phillips, and Ramsay. We also find that the preponderance of the evidence establishes that all the elements of claims 2 and 14 are taught by the cited art. Accordingly, we conclude that claims 2 and 14 are unpatentable as obvious in view of (1) a combination of Al-Shaykh, Qureshey, and Ramsay; and (2) a combination of Al-Shaykh, Qureshey, Phillips, and Ramsay.

III. CONCLUSION[17]

Petitioner has demonstrated by a preponderance of the evidence that claims 1, 2, 6–14, 18–25, and 27–29 of the '615 patent are unpatentable. A summary of our conclusions is set forth in the table below.

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1, 6–13, 18–25, 27–29	103(a)	Al-Shakayh, Qureshey	1, 6–13, 18–25, 27–29	
1, 6–13, 18–25, 27–29	103(a)	Al-Shakayh, Qureshey, Phillips	1, 6–13, 18–25, 27–29	
2, 14	103(a)	Al-Shakayh, Qureshey, Ramsay	2, 14	
2, 14	103(a)	Al-Shakayh, Qureshey, Phillips, Ramsay	2, 14	
Overall Outcome			1, 2, 6–14, 18–25, 27–29	

[17] Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

IV. ORDER

In consideration of the foregoing, it is

ORDERED that claims 1, 2, 6–14, 18–25, and 27–29 of U.S. Patent No. 9,967,615 B2 are held to be unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to this proceeding seeking judicial review of our decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2021-01563
Patent 9,967,615 B2

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(12) **United States Patent**
Coburn, IV et al.

(10) **Patent No.: US 9,967,615 B2**
(45) **Date of Patent: *May 8, 2018**

(54) **NETWORKED MUSIC PLAYBACK**

(71) Applicant: **Sonos, Inc**, Santa Barbara, CA (US)

(72) Inventors: **Arthur Coburn, IV**, Cambridge, MA (US); **Joni Hoadley**, Santa Barbara, CA (US)

(73) Assignee: **Sonos, Inc.**, Santa Barbara, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days. days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **14/628,952**

(22) Filed: **Feb. 23, 2015**

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H04N 21/436 (2011.01)
(Continued)

(52) **U.S. Cl.**
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(Continued)

(58) **Field of Classification Search**
CPC H04N 21/43615; H04N 21/6581; H04N 21/439; H04N 21/6125; H04N 21/64322;
(Continued)

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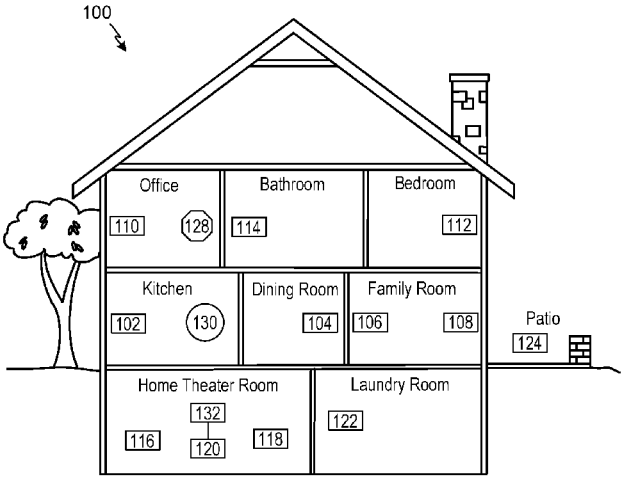
(57) **ABSTRACT**

Systems, methods, apparatus, and articles of manufacture to facilitate connection to a multimedia playback network are disclosed. An example method includes detecting a first input including an identification of a playback device; detecting a second input including an identification of an item on a controller, wherein multimedia content associated with the item is retrievable from a content provider; detecting a trigger, wherein the trigger is not the first input or the second input; and sending, in response to detecting the trigger, information regarding the multimedia content from the controller to the playback device, wherein the information includes an identification of the multimedia content for playback by the playback device, and wherein the information causes (a) the playback device to retrieve, independent of the controller, the multimedia content from the content provider and (b) playback of the retrieved multimedia content.

29 Claims, 11 Drawing Sheets



(51) **Int. Cl.**

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H04N 21/485	(2011.01)
H04N 21/81	(2011.01)
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(58) **Field of Classification Search**

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See application file for complete search history.

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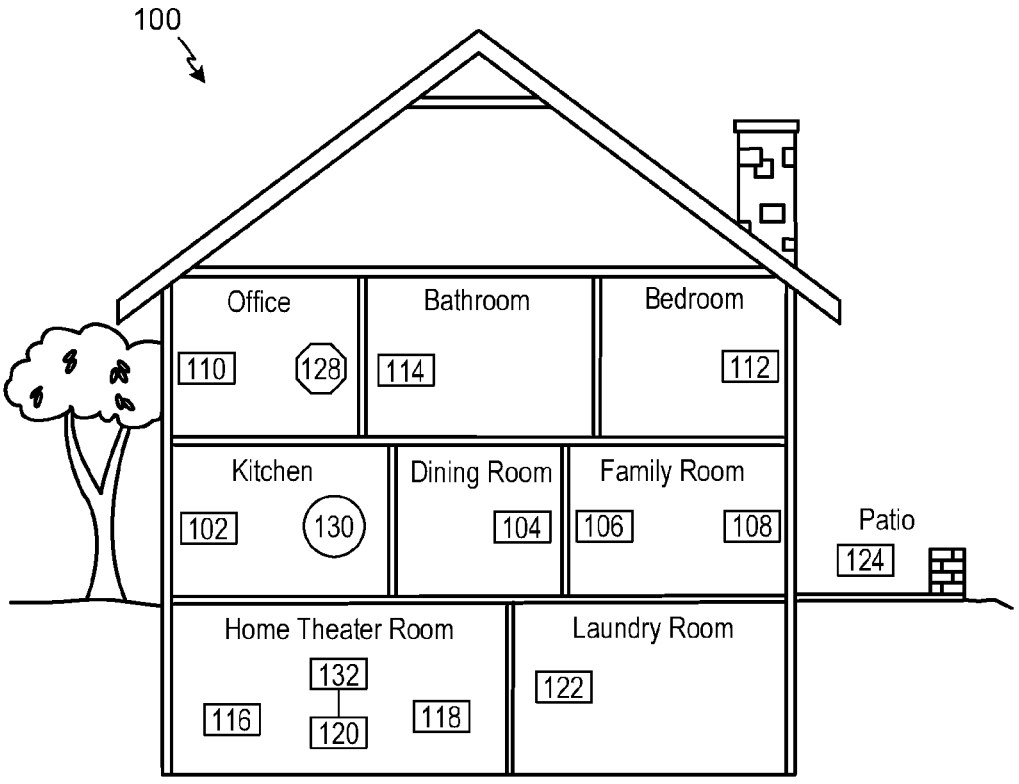
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Bathroom
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Bedroom
112
Kitchen
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Dining Room
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Family Room
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108
Patio
124
Home Theater Room
132
116
120
118
Laundry Room
122

FIGURE 1

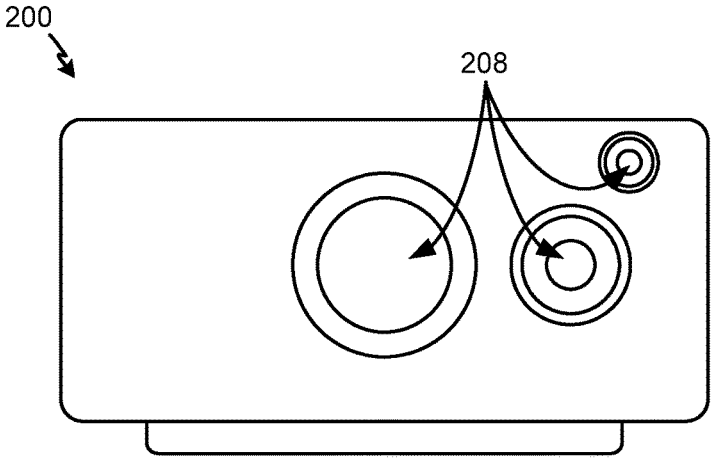


FIGURE 2A

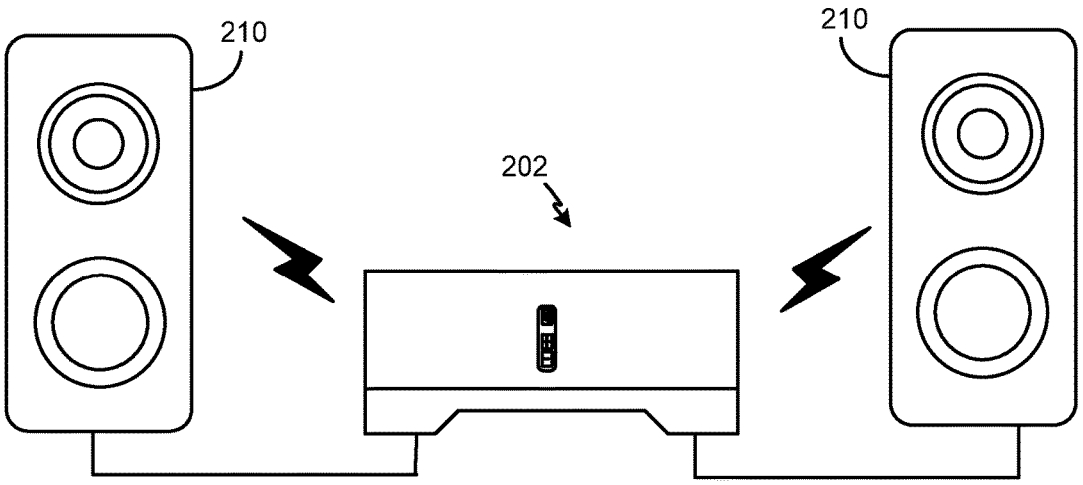


FIGURE 2B

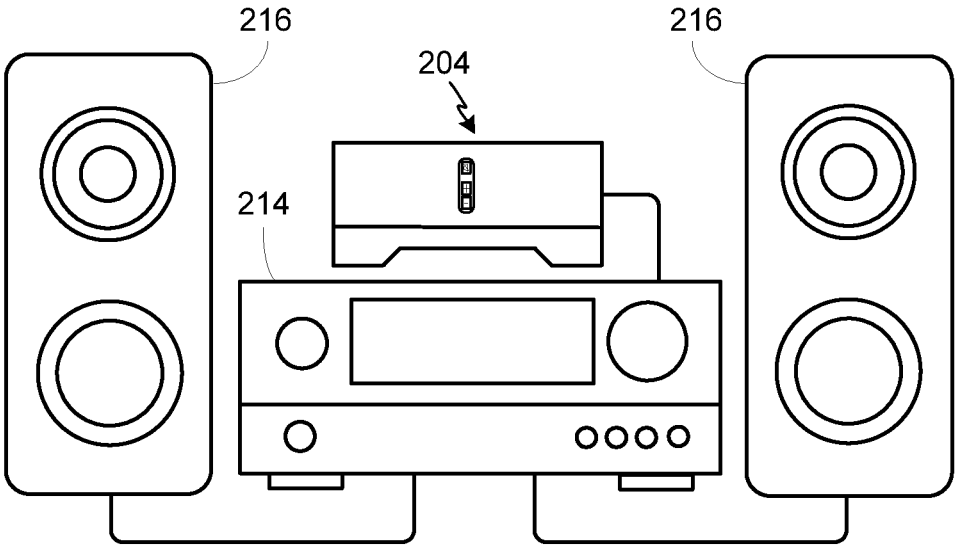


FIGURE 2C

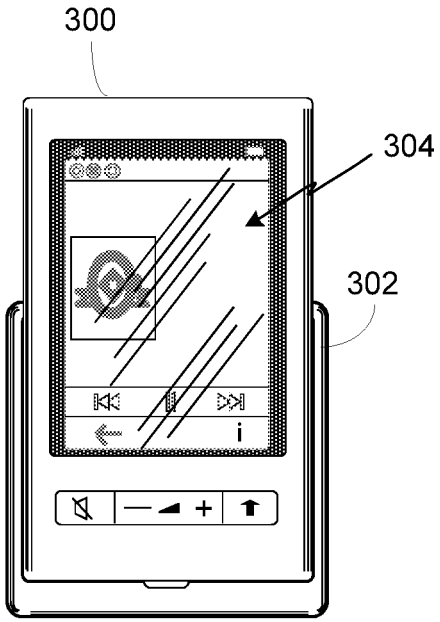


FIGURE 3

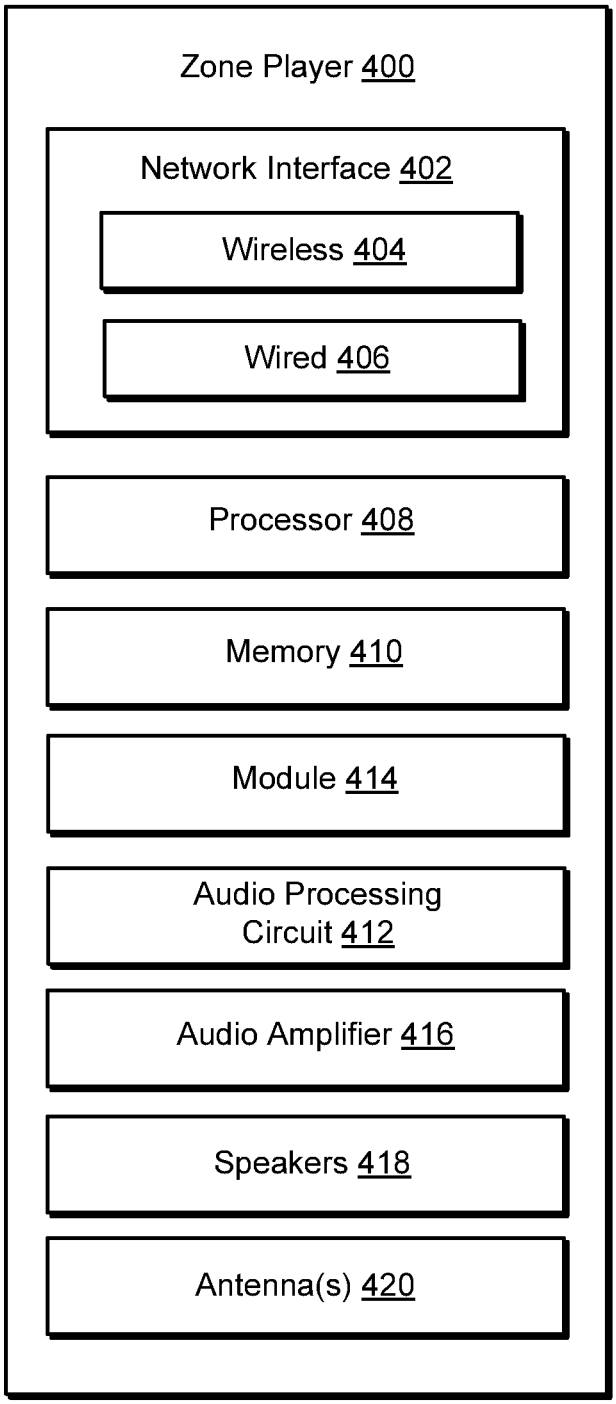
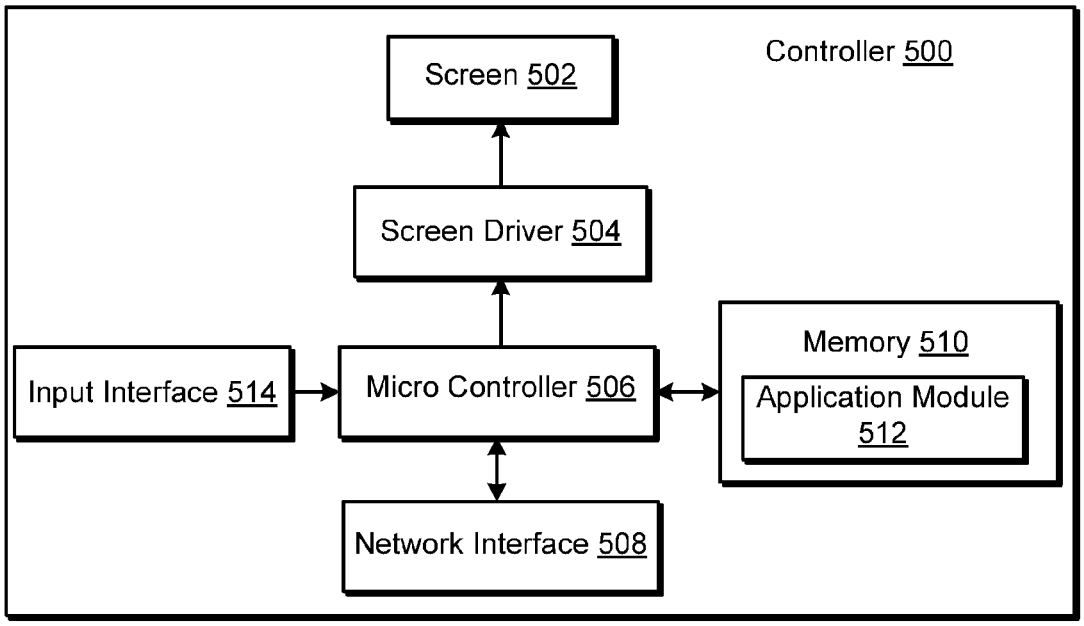

Zone Player 400
Network Interface 402
Wireless 404
Wired 406
Processor 408
Memory 410
Module 414
Audio Processing Circuit 412
Audio Amplifier 416
Speakers 418
Antenna(s) 420

FIGURE 4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Screen 502
Screen Driver 504
Input Interface 514
Micro Controller 506
Memory 510
Application Module 512
Network Interface 508

FIGURE 5

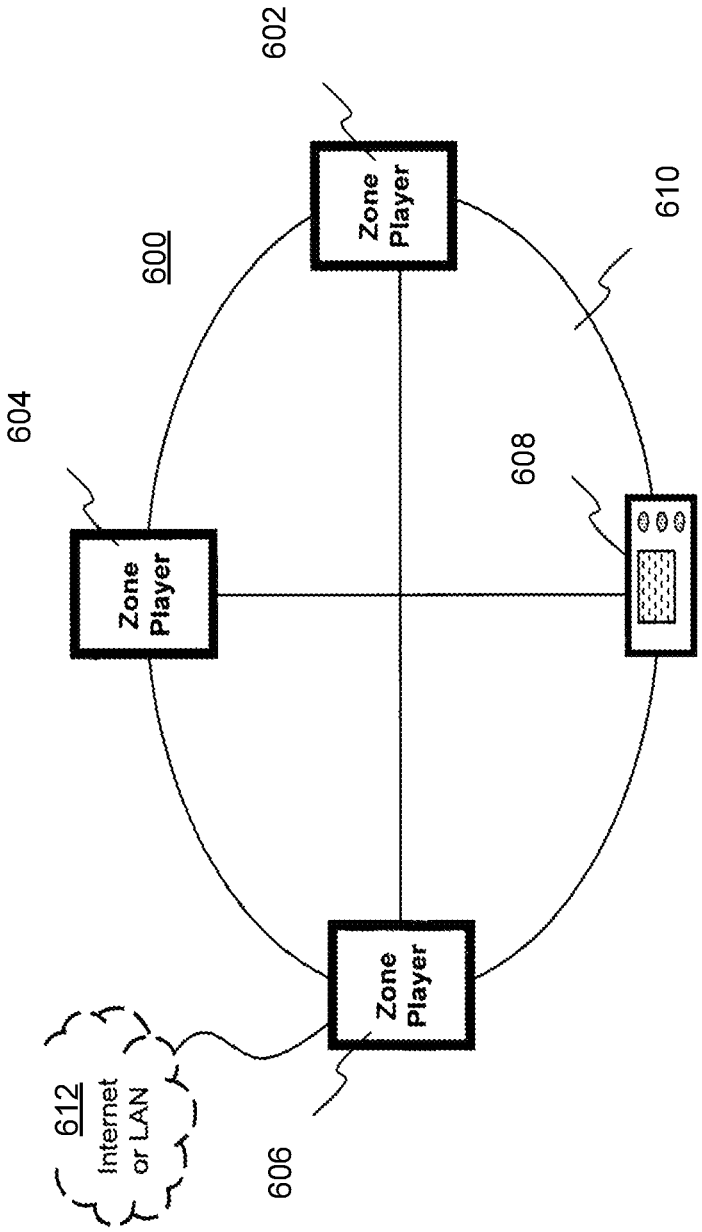
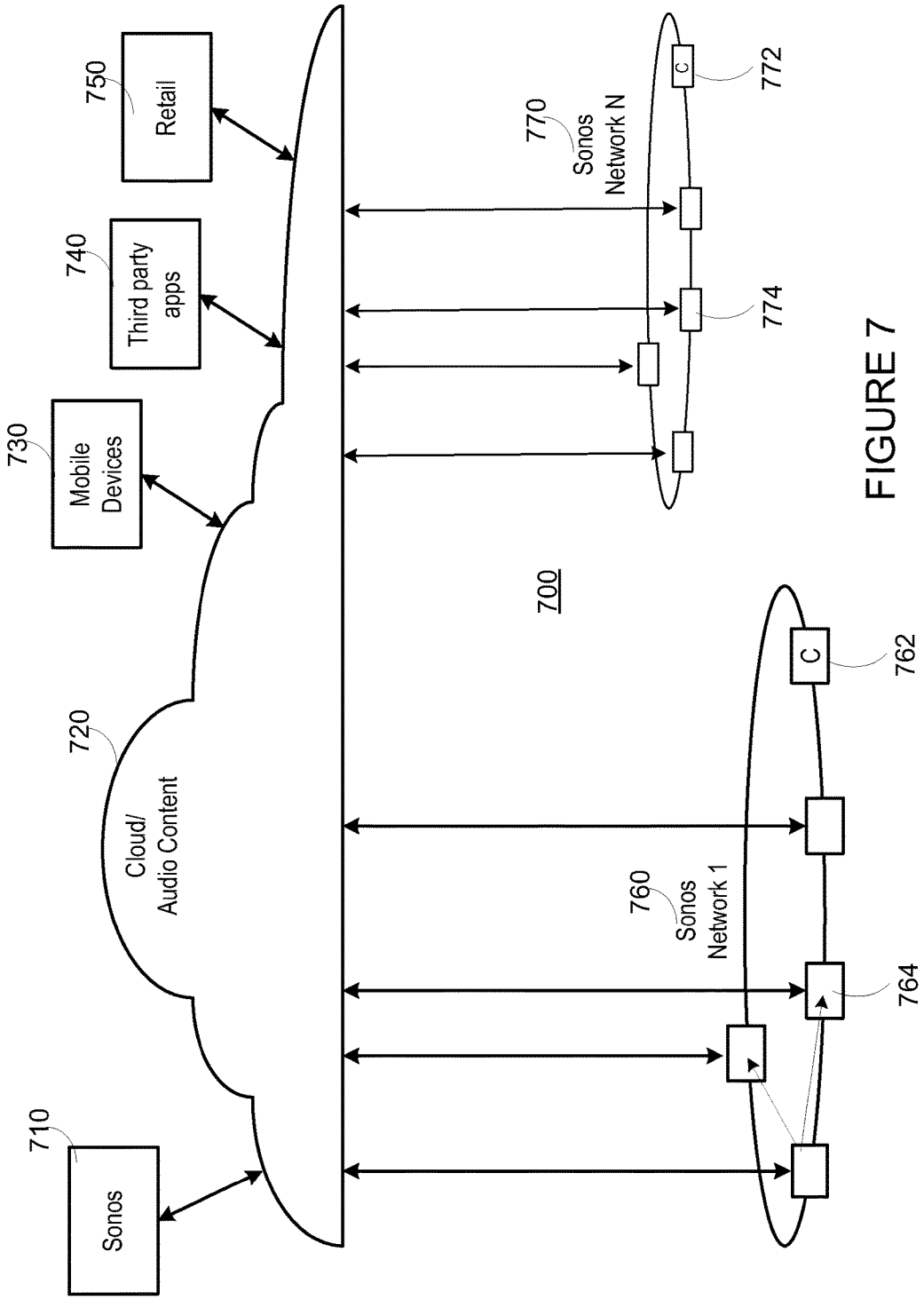

602
600
610
604
608
Zone Player
Zone Player
Zone Player
612
Internet or LAN
606

FIGURE 6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Retail
740
Third party apps
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Mobile Devices
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Cloud/ Audio Content
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Sonos
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C
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C
764

FIGURE 7

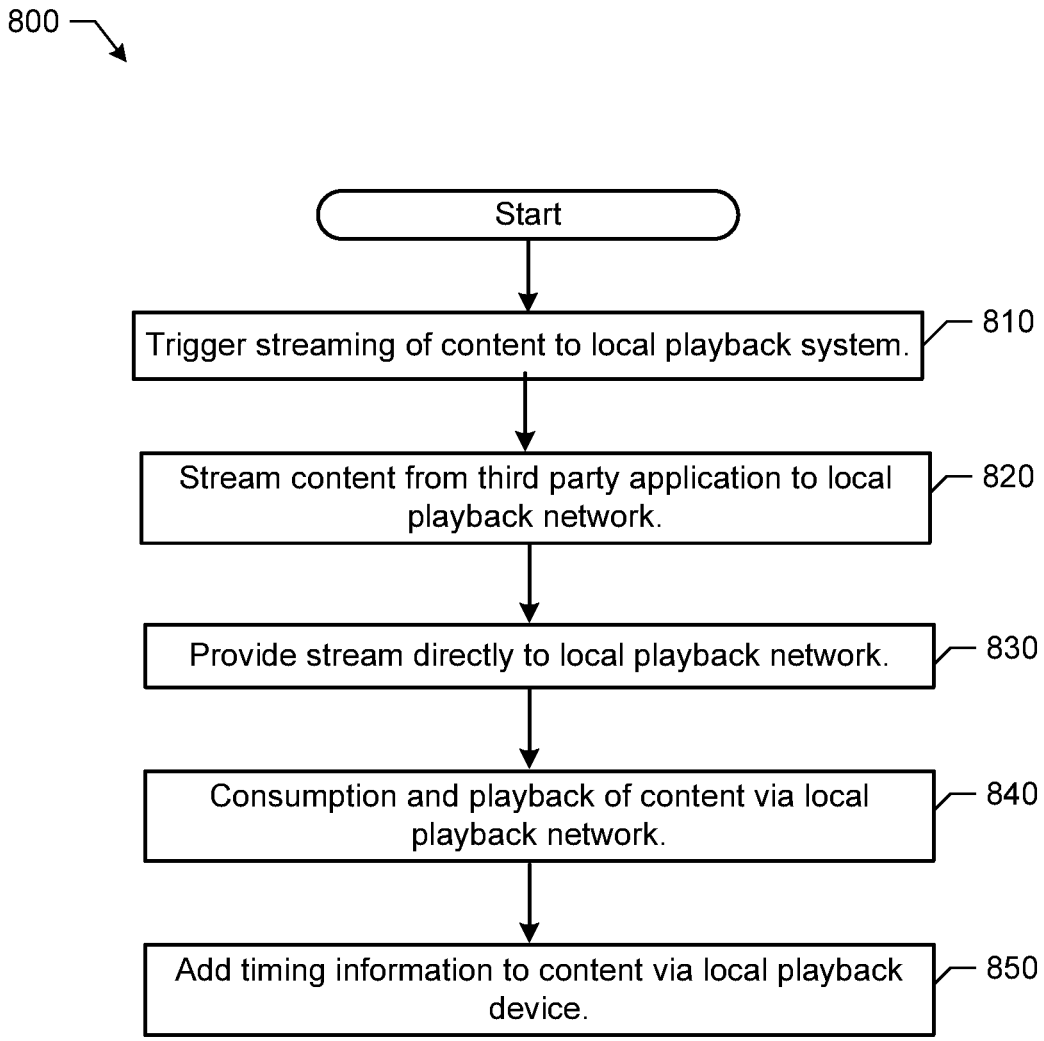
800
Start
Trigger streaming of content to local playback system.
810
Stream content from third party application to local playback network.
820
Provide stream directly to local playback network.
830
Consumption and playback of content via local playback network.
840
Add timing information to content via local playback device.
850

FIGURE 8

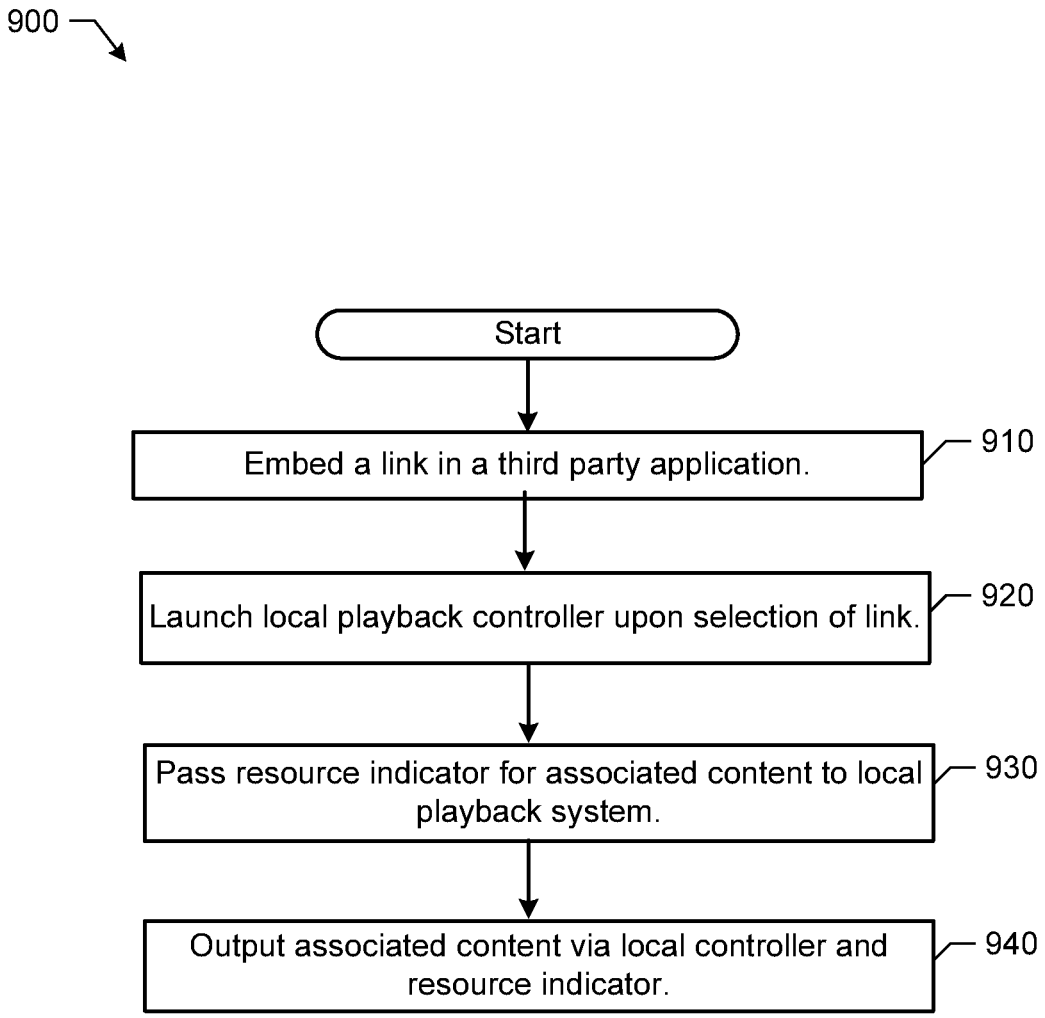
900
Start
Embed a link in a third party application.
910
Launch local playback controller upon selection of link.
920
Pass resource indicator for associated content to local playback system.
930
Output associated content via local controller and resource indicator.
940

FIGURE 9

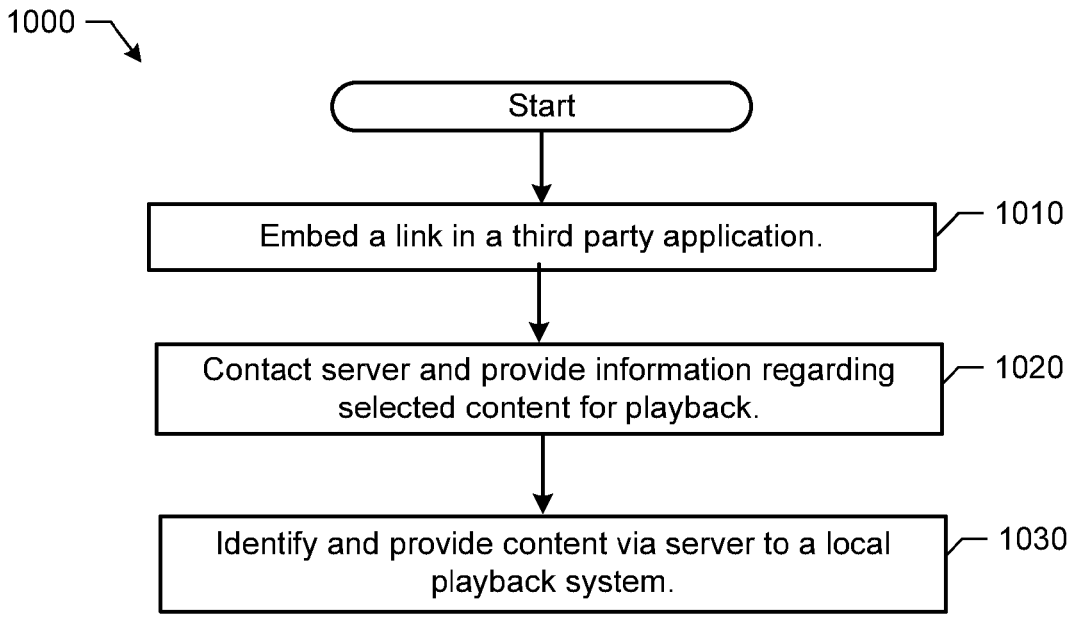
1000
Start
Embed a link in a third party application.
1010
Contact server and provide information regarding selected content for playback.
1020
Identify and provide content via server to a local playback system.
1030

FIGURE 10

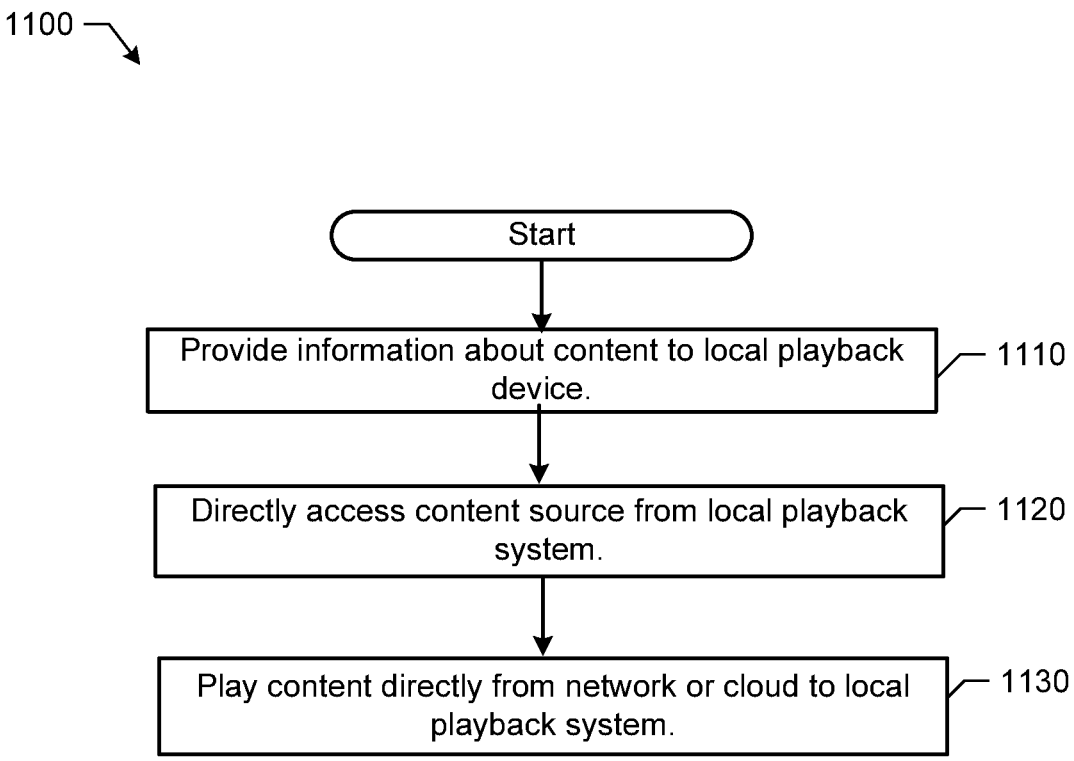
1100
Start
Provide information about content to local playback device.
1110
Directly access content source from local playback system.
1120
Play content directly from network or cloud to local playback system.
1130

FIGURE 11

NETWORKED MUSIC PLAYBACK

CROSS-REFERENCE TO RELATED APPLICATIONS

The present application claims the benefit of priority to U.S. Non-Provisional application Ser. No. 13/341,237, filed on Dec. 30, 2011, entitled "Systems and Methods for Networked Music Playback", which is hereby incorporated by reference in its entirety for all purposes.

FIELD OF THE DISCLOSURE

The disclosure is related to consumer electronics and, more particularly, to providing music for playback via one or more devices on a playback data network.

BACKGROUND

Technological advancements have increased the accessibility of music content, as well as other types of media, such as television content, movies, and interactive content. For example, a user can access audio, video, or both audio and video content over the Internet through an online store, an Internet radio station, an online music service, an online movie service, and the like, in addition to the more traditional avenues of accessing audio and video content. Demand for such audio and video content continues to surge. Given the high demand, technology used to access and play such content has likewise improved.

BRIEF DESCRIPTION OF THE DRAWINGS

Features, aspects, and advantages of the presently disclosed technology are better understood with regard to the following description, appended claims, and accompanying drawings where:

FIG. **1** shows an illustration of an example system in which embodiments of the methods and apparatus disclosed herein can be implemented;

FIG. **2**A shows an illustration of an example zone player having a built-in amplifier and speakers;

FIG. **2**B shows an illustration of an example zone player having a built-in amplifier and connected to external speakers;

FIG. **2**C shows an illustration of an example zone player connected to an A/V receiver and speakers;

FIG. **3** shows an illustration of an example controller;

FIG. **4** shows an internal functional block diagram of an example zone player;

FIG. **5** shows an internal functional block diagram of an example controller;

FIG. **6** shows an example ad-hoc playback network;

FIG. **7** shows a system including a plurality of networks including a cloud-based network and at least one local playback network; and

FIGS. **8-11** show flow diagrams for methods to provide audio content to a local playback system.

In addition, the drawings are for the purpose of illustrating example embodiments, but it is understood that the present disclosure is not limited to the arrangements and instrumentality shown in the drawings.

DETAILED DESCRIPTION

I. Overview

Wired or wireless networks can be used to connect one or more multimedia playback devices for a home or other

location playback network (e.g., a home music system). Certain examples provide automatic configuration of parameters of a playback device to be coupled to a network with reduced or minimum human intervention. For example, a wired and/or wireless ad-hoc network is established to facilitate communications among a group of devices. Music and/or other multimedia content can be shared among devices and/or groups of devices (also referred to herein as zones) associated with a playback network.

Certain embodiments facilitate streaming or otherwise providing music from a music-playing application (e.g., browser-based application, native music player, other multimedia application, and so on) to a multimedia content playback (e.g., Sonos™) system. Certain embodiments provide simple, easy-to-use and secure systems and methods for multimedia content playback across a plurality of systems and locations. Certain embodiments facilitate integration between content partners and a playback system as well as supporting maintenance of such content and system.

Although the following discloses example systems, methods, apparatus, and articles of manufacture including, among other components, firmware and/or software executed on hardware, it should be noted that such systems, methods, apparatus, and/or articles of manufacture are merely illustrative and should not be considered as limiting. For example, it is contemplated that any or all of these firmware, hardware, and/or software components could be embodied exclusively in hardware, exclusively in software, exclusively in firmware, or in any combination of hardware, software, and/or firmware. Accordingly, while the following describes example systems, methods, apparatus, and/or articles of manufacture, the examples provided are not the only way(s) to implement such systems, methods, apparatus, and/or articles of manufacture.

When any of the appended claims are read to cover a purely software and/or firmware implementation, at least one of the elements in at least one example is hereby expressly defined to include a tangible medium such as a memory, DVD, CD, Blu-ray, and so on, storing the software and/or firmware.

Reference herein to "embodiment" means that a particular feature, structure, or characteristic described in connection with the embodiment can be included in at least one example embodiment of the invention. The appearances of this phrase in various places in the specification are not necessarily all referring to the same embodiment, nor are separate or alternative embodiments mutually exclusive of other embodiments. As such, the embodiments described herein, explicitly and implicitly understood by one skilled in the art, can be combined with other embodiments.

Certain embodiments provide a method to provide content to a local playback network. The example method includes identifying multimedia content from a content provider. The example method includes passing information regarding the multimedia content to a local playback system including one or more multimedia playback devices in response to a trigger. The example method includes facilitating play of the multimedia content via a local playback network associated with the local playback system.

Certain embodiments provide a computer readable storage medium including instructions for execution by a processor, the instructions, when executed, cause the processor to implement a method to provide content to a local playback network. The example method includes identifying multimedia content from a content provider. The example method includes passing information regarding the multimedia content to a local playback system including one or

more multimedia playback devices in response to a trigger. The example method includes facilitating play of the multimedia content via a local playback network associated with the local playback system.

Certain embodiments provide a multimedia playback device including a wireless communication interface to communicate with a local playback network and a multimedia content source and a processor. The process is to identify multimedia content from the multimedia content source; pass information regarding the multimedia content to device on the local playback network in response to a trigger; and facilitate play of the multimedia content via the devices on the local playback network.

II. Example Environment

Referring now to the drawings, in which like numerals can refer to like parts throughout the figures, FIG. **1** shows an example system configuration **100** in which one or more of the method and/or apparatus disclosed herein can be practiced or implemented. By way of illustration, the system configuration **100** represents a home with multiple zones. Each zone, for example, represents a different room or space, such as an office, bathroom, bedroom, kitchen, dining room, family room, home theater room, utility or laundry room, and patio. While not shown here, a single zone can cover more than one room or space. One or more of zone players **102-124** are shown in each respective zone. A zone player **102-124**, also referred to as a playback device, multimedia unit, speaker, and so on, provides audio, video, and/or audiovisual output. A controller **130** (e.g., shown in the kitchen for purposes of illustration) provides control to the system configuration **100**. The system configuration **100** illustrates an example whole house audio system, though it is understood that the technology described herein is not limited to its particular place of application or to an expansive system like a whole house audio system **100** of FIG. **1**.

FIGS. **2**A, **2**B, and **2**C show example illustrations of zone players **200-204**. The zone players **200-204** of FIGS. **2**A, **2**B, and **2**C, respectively, can correspond to any of the zone players **102-124** of FIG. **1**. While certain embodiments provide multiple zone players, an audio output can be generated using only a single zone player. FIG. **2**A illustrates a zone player **200** including sound producing equipment **208** capable of generating sound or an audio output corresponding to a signal received (e.g., wirelessly and/or via a wired interface). The sound producing equipment **208** of the zone player **200** of FIG. **2**A includes a built-in amplifier (not shown in this illustration) and speakers (e.g., a tweeter, a mid-range driver, and/or a subwoofer). In certain embodiments, the zone player **200** of FIG. **2**A can be configured to play stereophonic audio or monaural audio. In some embodiments, the zone player **200** of FIG. **2**A can be configured as a component in a combination of zone players to play stereophonic audio, monaural audio, and/or surround audio. As described in greater detail below, in some embodiments, the example zone player **200** of FIG. **2**A can also transmit a second signal to, for example, other zone player(s) in the same or different zone(s), speaker(s), receiver(s), and so on. Transmission of the second signal can be part of, for example, a system in which multiple zone players, speakers, receivers, and so on, form a network to, for example, present media content in a synchronization or distributed manner.

The example zone player **202** of FIG. **2**B includes a built-in amplifier (not shown in this illustration) to power a set of detached speakers **210**. The speakers **210** of FIG. **2**B can include, for example, any type of loudspeaker. The zone player **202** of FIG. **2**B can communicate a signal corresponding to audio content to the detached speakers **210** via wired and/or wireless channels. Instead of receiving and generating audio content as in FIG. **2**A, the zone player **202** of FIG. **2**B receives the audio content and transmits the same (e.g., after processing the received signal) to the detached speakers **210**. Similar to the example zone player **200** of FIG. **2**A, in some embodiments the zone player **202** can transmit a second signal to, for example, other zone player(s) in the same or different zone(s), speaker(s), receiver(s), and so on.

The example zone player **204** of FIG. **2**C does not include an amplifier, but allows a receiver **214**, or another audio and/or video type device with built-in amplification, to connect to a data network **128** of FIG. **1** and to play audio received over the data network **128** via the receiver **214** and a set of detached speakers **216**. In addition to the wired couplings shown in FIG. **2**C, the detached speakers **216** can receive audio content via a wireless communication channel between the detached speakers **216** and, for example, the zone player **204** and/or the receiver **214**. In some embodiments the zone player **202** can transmit a second signal to, for example, other zone player(s) in the same or different zone(s), speaker(s), receiver(s), and so on.

Example zone players include a "Sonos S5," "Sonos Play:5," "Sonos Play:3," "ZonePlayer 120," and "ZonePlayer 90," which are offered by Sonos, Inc. of Santa Barbara, Calif. Any other past, present, and/or future zone players can additionally or alternatively be used to implement the zone players of example embodiments disclosed herein. A zone player can also be referred to herein as a playback device, and a zone player is not limited to the particular examples illustrated in FIGS. **2**A, **2**B, and **2**C. For example, a zone player can include a wired or wireless headphone. In other examples, a zone player might include a subwoofer. In yet other examples, a zone player can include a sound bar. In an example, a zone player can include or interact with a docking station for an Apple iPod™ or similar device. In some embodiments, a zone player can relay one or more signals received from, for example, a first zone player to another playback device. In some embodiments, a zone player can receive a first signal and generate an output corresponding to the first signal and, simultaneously or separately, can receive a second signal and transmit or relay the second signal to another zone player(s), speaker(s), receiver(s), and so on. Thus, an example zone player described herein can act as a playback device and, at the same time, operate as a hub in a network of zone players. In such instances, media content corresponding to the first signal can be different from the media content corresponding to the second signal.

FIG. **3** shows an example illustration of a wireless controller **300** in a docking station **302**. The controller **300** can correspond to the controlling device **130** of FIG. **1**. The controller **300** is provided with a touch screen **304** that allows a user to interact with the controller **300**, for example, to retrieve and navigate a playlist of audio items, control operations of one or more zone players, and provide overall control of the system configuration **100**. In certain embodiments, any number of controllers can be used to control the system configuration **100**. In certain embodiments, there can be a limit on the number of controllers that can control the system configuration **100**. The controllers might be wireless like wireless controller **300** or wired to the data network **128**. Furthermore, an application running on any network-enabled portable devices, such as an iPhone™ iPad™

Android™ powered phone, or any other smart phone or network-enabled device can be used as a controller by connecting to the data network **128**. An application running on a laptop or desktop PC or Mac can also be used as a controller. Example controllers include a "Sonos® Controller 200," "Sonos® Controller for iPhone," "Sonos® Controller for iPad," "Sonos® Controller for Android, "Sonos® Controller for Mac or PC," which are offered by Sonos, Inc. of Santa Barbara, Calif. The flexibility of such an application and its ability to be ported to a new type of portable device is advantageous.

Referring back to the system configuration **100** of FIG. **1**, a particular zone can contain one or more zone players. For example, the family room of FIG. **1** contains two zone players **106** and **108**, while the kitchen is shown with one zone player **102**. Zones can be dynamically configured by positioning a zone player in a room or space and assigning via the controller **130** the zone player to a new or existing zone. As such, zones can be created, combined with another zone, removed, and given a specific name (e.g., "Kitchen"), if so programmed. The zone players **102** to **124** are coupled directly or indirectly to a data network, such as the data network **128** shown in FIG. **1**. The data network **128** is represented by an octagon in the figure to stand out from other components shown in the figure. While the data network **128** is shown in a single location, it is understood that such a network can be distributed in and around the system configuration **100**.

Particularly, the data network **128** can be a wired network, a wireless network, or a combination of both. In some embodiments, one or more of the zone players **102-124** are wirelessly coupled to the data network **128** based on a proprietary mesh network. In some embodiments, one or more of the zone players **102-124** are wirelessly coupled to the data network **128** using a non-mesh topology. In some embodiments, one or more of the zone players **102-124** are coupled via a wire to the data network **128** using Ethernet or similar technology. In addition to the one or more zone players **102-124** connecting to the data network **128**, the data network **128** can further allow access to a wide area network, such as the Internet.

In certain embodiments, the data network **128** can be created by connecting any of the zone players **102-124**, or some other connecting device, to a broadband router. Other zone players **102-124** can then be added wired or wirelessly to the data network **128**. For example, a zone player (e.g., any of zone players **102-124**) can be added to the system configuration **100** by simply pressing a button on the zone player itself, which enables a connection to be made to the data network **128**. The broadband router can be connected to an Internet Service Provider (ISP), for example. The broadband router can be used to form another data network within the system configuration **100**, which can be used in other applications (e.g., web surfing). The data network **128** can also be used in other applications, if so programmed. Further, in certain embodiments, the data network **128** is the same network used for other applications in the household.

In certain embodiments, each zone can play from the same audio source as another zone or each zone can play from a different audio source. For example, someone can be grilling on the patio and listening to jazz music via zone player **124**, while someone is preparing food in the kitchen and listening to classical music via zone player **102**. Further, someone can be in the office listening to the same jazz music via zone player **110** that is playing on the patio via zone player **124**. In some embodiments, the jazz music played via zone players **110** and **124** is played in synchrony. Synchronizing playback amongst zones allows for someone to pass through zones while seamlessly listening to the audio. Further, zones can be put into a "party mode" such that all associated zones will play audio in synchrony.

In certain embodiments, a zone contains two or more zone players. For example, the family room contains two zone players **106** and **108**, and the home theater room contains at least zone players **116**, **118**, and **120**. A zone can be configured to contain as many zone players as desired, and for example, the home theater room might contain additional zone players to play audio from a 5.1 channel or greater audio source (e.g., a movie encoded with 5.1 or greater audio channels). If a zone contains two or more zone players, such as the two zone players **106** and **108** in the family room, then the two zone players **106** and **108** can be configured to play the same audio source in synchrony, or the two zone players **106** and **108** can be paired to play two separate sounds in left and right channels, for example. In other words, the stereo effects of a sound can be reproduced or enhanced through the two zone players **106** and **108**, one for the left sound and the other for the right sound. In certain embodiments, paired zone players can play audio in synchrony with other zone players.

In certain embodiments, three or more zone players can be configured to play various channels of audio that is encoded with three channels or more sound. For example, the home theater room shows zone players **116**, **118**, and **120**. If the sound is encoded as 2.1 channel audio, then the zone player **116** can be configured to play left channel audio, the zone player **118** can be configured to play right channel audio, and the zone player **120** can be configured to play bass frequencies. Other configurations are possible and depend on the number of zone players and the type of audio. Further, a particular zone can be configured to play a 5.1 channel audio in one instance, such as when playing audio from a movie, and then dynamically switch to play stereo, such as when playing audio from a two channel source.

In certain embodiments, two or more zone players can be sonically consolidated to form a single, consolidated zone player. A consolidated zone player (though made up of multiple, separate devices) can be configured to process and reproduce sound differently than an unconsolidated zone player or zone players that are paired, because a consolidated zone player will have additional speaker drivers from which sound can be passed. The consolidated zone player can further be paired with a single zone player or yet another consolidated zone player. Each playback device of a consolidated playback device is preferably set in a consolidated mode.

According to some embodiments, one can continue to do any of: group, consolidate, and pair zone players, for example, until a desired configuration is complete. The actions of grouping, consolidation, and pairing are preferably performed through a control interface, such as using controller **130**, and not by physically connecting and reconnecting speaker wire, for example, to individual, discrete speakers to create different configurations. As such, certain embodiments described herein provide a more flexible and dynamic platform through which sound reproduction can be offered to the end-user.

Sources of audio content to be played by zone players **102-124** are numerous. Music from a personal library stored on a computer or networked-attached storage (NAS) can be accessed via the data network **128** and played. Internet radio stations, shows, and podcasts can be accessed via the data network **128**. Music services that let a user stream and download music and audio content can be accessed via the

data network **128**. Further, music can be obtained from traditional sources, such as a turntable or CD player, via a line-in connection to a zone player, for example. Audio content can also be accessed through AirPlay™ wireless technology by Apple, Inc., for example. Audio content received from one or more sources can be shared amongst the zone players **102** to **124** via the data network **128** and/or the controller **130**. The above-disclosed sources of audio content are referred to herein as network-based audio information sources. However, network-based audio information sources are not limited thereto.

The example home theater zone players **116**, **118**, **120** are coupled to an audio information source such as a television **132**. In some examples, the television **132** is used as a source of audio for the home theater zone players **116**, **118**, **120**, while in other examples audio information from the television **132** can be shared with any of the zone players **102-124** in the audio system **100**.

III. Example Playback Device

Referring now to FIG. **4**, there is shown an example functional block diagram of a zone player **400** in accordance with an embodiment. The zone player **400** of FIG. **4** includes a network interface **402**, a processor **408**, a memory **410**, an audio processing component **412**, a module **414**, an audio amplifier **416**, and a speaker unit **418** coupled to the audio amplifier **416**. FIG. **2**A shows an example illustration of such a zone player. Other types of zone players can not include the speaker unit **418** (e.g., such as shown in FIG. **2**B) or the audio amplifier **416** (e.g., such as shown in FIG. **2**C). Further, it is contemplated that the zone player **400** can be integrated into another component. For example, the zone player **400** could be constructed as part of a lamp for indoor or outdoor use.

Referring back to FIG. **4**, the network interface **402** facilitates a data flow between zone players and other devices on a data network (e.g., the data network **128** of FIG. **1**) and the zone player **400**. In some embodiments, the network interface **402** can manage the assembling of an audio source or file into smaller packets that are to be transmitted over the data network or reassembles received packets into the original source or file. In some embodiments, the network interface **402** can further handle the address part of each packet so that it gets to the right destination or intercepts packets destined for the zone player **400**. Accordingly, in certain embodiments, each of the packets includes an Internet Protocol (IP)-based source address as well as an IP-based destination address.

In some embodiments, the network interface **402** can include one or both of a wireless interface **404** and a wired interface **406**. The wireless interface **404**, also referred to as an RF interface, provides network interface functions for the zone player **400** to wirelessly communicate with other devices (e.g., other zone player(s), speaker(s), receiver(s), component(s) associated with the data network **128**, and so on) in accordance with a communication protocol (e.g., any of the wireless standards IEEE 802.11a, 802.11b, 802.11g, 802.11n, or 802.15). To receive wireless signals and to provide the wireless signals to the wireless interface **404** and to transmit wireless signals, the zone player **400** of FIG. **4** includes one or more antennas **420**. The wired interface **406** provides network interface functions for the zone player **400** to communicate over a wire with other devices in accordance with a communication protocol (e.g., IEEE 802.3). In some embodiments, a zone player includes both of the interfaces **404** and **406**. In some embodiments, a zone player **400** includes only the wireless interface **404** or the wired interface **406**.

In some embodiments, the processor **408** is a clock-driven electronic device that is configured to process input data according to instructions stored in memory **410**. The memory **410** is data storage that can be loaded with one or more software modules **414**, which can be executed by the processor **408** to achieve certain tasks. In the illustrated embodiment, the memory **410** is a tangible machine readable medium storing instructions that can be executed by the processor **408**. In some embodiments, a task might be for the zone player **400** to retrieve audio data from another zone player or a device on a network. In some embodiments, a task might be for the zone player **400** to send audio data to another zone player or device on a network. In some embodiments, a task might be for the zone player **400** to synchronize playback of audio with one or more additional zone players. In some embodiments, a task might be to pair the zone player **400** with one or more zone players to create a multi-channel audio environment. Additional or alternative tasks can be achieved via the one or more software modules **414** and the processor **408**.

The audio processing component **412** can include one or more digital-to-analog converters (DAC), an audio preprocessing component, an audio enhancement component or a digital signal processor, and so on. In certain embodiments, the audio that is retrieved via the network interface **402** is processed and/or intentionally altered by the audio processing component **412**. Further, the audio processing component **412** can produce analog audio signals. The processed analog audio signals are then provided to the audio amplifier **416** for play back through speakers **418**. In addition, the audio processing component **412** can include necessary circuitry to process analog or digital signals as inputs to play from zone player **400**, send to another zone player on a network, or both play and send to another zone player on the network. An example input includes a line-in connection (e.g., an auto-detecting 3.5 mm audio line-in connection).

The audio amplifier **416** is a device that amplifies audio signals to a level for driving one or more speakers **418**. The one or more speakers **418** can include an individual transducer (e.g., a "driver") or a complete speaker system that includes an enclosure including one or more drivers. A particular driver can be a subwoofer (for low frequencies), a mid-range driver (middle frequencies), and a tweeter (high frequencies), for example. An enclosure can be sealed or ported, for example.

A zone player **400** can also be referred to herein as a playback device. An example playback device includes a Sonos® Play:5, which is manufactured by Sonos, Inc. of Santa Barbara, Calif. The Play:5 is an example zone player with a built-in amplifier and speakers. In particular, the Play:5 is a five-driver speaker system that includes two tweeters, two mid-range drivers, and one subwoofer. When playing audio content via the Play:5, the left audio data of a track is sent out of the left tweeter and left mid-range driver, the right audio data of a track is sent out of the right tweeter and the right mid-range driver, and mono bass is sent out of the subwoofer. Further, both mid-range drivers and both tweeters have the same equalization (or substantially the same equalization). That is, they are both sent the same frequencies, just from different channels of audio. Audio from Internet radio stations, online music and video services, downloaded music, analog audio inputs, television, DVD, and so on, can be played from a Sonos® Play:5. While the Play:5 is an example of a zone player with

speakers, it is understood that a zone player with speakers is not limited to one with a certain number of speakers (e.g., five speakers as in the Play:5), but rather can contain one or more speakers. Further, a zone player can be part of another device, which might even serve a purpose different than audio (e.g., a lamp).

IV. Example Controller

Referring now to FIG. **5**, there is shown an example controller **500**, which can correspond to the controlling device **130** in FIG. **1**. The controller **500** can be used to facilitate the control of multi-media applications, automation and others in a system. In particular, the controller **500** is configured to facilitate a selection of a plurality of audio sources available on the network and enable control of one or more zone players (e.g., the zone players **102-124** in FIG. **1**) through a wireless network interface **508**. According to one embodiment, the wireless communications is based on an industry standard (e.g., infrared, radio, wireless standards IEEE 802.11a, 802.11b 802.11g, 802.11n, or 802.15). Further, when a particular audio is being accessed via the controller **500** or being played via a zone player, a picture (e.g., album art) or any other data, associated with the audio source can be transmitted from a zone player or other electronic device to the controller **500** for display.

The controller **500** is provided with a screen **502** and an input interface **514** that allows a user to interact with the controller **500**, for example, to navigate a playlist of many multimedia items and to control operations of one or more zone players. The screen **502** on the controller **500** can be an LCD screen, for example. The screen **500** communicates with and is commanded by a screen driver **504** that is controlled by a microcontroller (e.g., a processor) **506**. The memory **510** can be loaded with one or more application modules **512** that can be executed by the microcontroller **506** with or without a user input via the user interface **514** to achieve certain tasks. In some embodiments, an application module **512** is configured to facilitate grouping a number of selected zone players into a zone group and synchronizing the zone players for audio play back. In some embodiments, an application module **512** is configured to control the audio sounds (e.g., volume) of the zone players in a zone group. In operation, when the microcontroller **506** executes one or more of the application modules **512**, the screen driver **504** generates control signals to drive the screen **502** to display an application specific user interface accordingly.

The controller **500** includes a network interface **508** that facilitates wireless communication with a zone player. In some embodiments, the commands such as volume control and audio playback synchronization are sent via the network interface **508**. In some embodiments, a saved zone group configuration is transmitted between a zone player and a controller via the network interface **508**. The controller **500** can control one or more zone players, such as **102-124** of FIG. **1**. There can be more than one controller for a particular system. Further, a controller can be integrated into a zone player.

It should be noted that other network-enabled devices such as an iPhone®, iPad® or any other smart phone or network-enabled device (e.g., a networked computer such as a PC or Mac®) can also be used as a controller to interact or control zone players in a particular environment. In some embodiments, a software application or upgrade can be downloaded onto a network enabled device to perform the functions described herein.

In certain embodiments, a user can create a zone group including at least two zone players from the controller **500**. The zone players in the zone group can play audio in a synchronized fashion, such that all of the zone players in the zone group play back an identical audio source or a list of identical audio sources in a synchronized manner such that no (or substantially no) audible delays or hiccups could be heard. Similarly, in some embodiments, when a user increases the audio volume of the group from the controller **500**, the signals or data of increasing the audio volume for the group are sent to one of the zone players and causes other zone players in the group to be increased together in volume.

A user via the controller **500** can group zone players into a zone group by activating a "Link Zones" or "Add Zone" soft button, or de-grouping a zone group by activating an "Unlink Zones" or "Drop Zone" button. For example, one mechanism for 'joining' zone players together for audio play back is to link a number of zone players together to form a group. To link a number of zone players together, a user can manually link each zone player or room one after the other. For example, assume that there is a multi-zone system that includes the following zones: Bathroom, Bedroom, Den, Dining Room, Family Room, and Foyer.

In certain embodiments, a user can link any number of the six zone players, for example, by starting with a single zone and then manually linking each zone to that zone.

In certain embodiments, a set of zones can be dynamically linked together using a command to create a zone scene or theme (subsequent to first creating the zone scene). For instance, a "Morning" zone scene command can link the Bedroom, Office, and Kitchen zones together in one action. Without this single command, the user would need to manually and individually link each zone. The single command might include a mouse click, a double mouse click, a button press, a gesture, or some other programmed action. Other kinds of zone scenes can be programmed.

In certain embodiments, a zone scene can be triggered based on time (e.g., an alarm clock function). For instance, a zone scene can be set to apply at 8:00 am. The system can link appropriate zones automatically, set specific music to play, and then stop the music after a defined duration. Although any particular zone can be triggered to an "On" or "Off" state based on time, for example, a zone scene enables any zone(s) linked to the scene to play a predefined audio (e.g., a favorable song, a predefined playlist) at a specific time and/or for a specific duration. If, for any reason, the scheduled music failed to be played (e.g., an empty playlist, no connection to a share, failed Universal Plug and Play (UPnP), no Internet connection for an Internet Radio station, and so on), a backup buzzer can be programmed to sound. The buzzer can include a sound file that is stored in a zone player, for example.

V. Example Ad-Hoc Network

Certain particular examples will now be provided in connection with FIGS. **6-8**B to describe, for purposes of illustration only, certain base systems and methods to provide and facilitate connection to a playback network. FIG. **6** shows that there are three zone players **602**, **604** and **606** and a controller **608** that form a network branch that is also referred to as an Ad-Hoc network **610**. The network **610** may be wireless, wired, or a combination of wired and wireless. In general, an Ad-Hoc (or "spontaneous") network is a local area network or other small network in which there is no one access point for all traffic. With an established Ad-Hoc network **610**, the devices **602**, **604**, **606** and **608** can all

communicate with each other in a "peer-to-peer" style of communication, for example. Furthermore, devices may come/and go from the network **610**, and the network **610** will automatically reconfigure itself without needing the user to reconfigure the network **610**.

Using the Ad-Hoc network **610**, the devices **602**, **604**, **606**, and **608** can share or exchange one or more audio sources and be grouped to play the same or different audio sources. For example, the devices **602** and **604** are grouped to playback one piece of music, and at the same time, the device **606** plays back another piece of music. In other words, the devices **602**, **604**, **606** and **608**, as shown in FIG. **6**, form a HOUSEHOLD that distributes audio and/or reproduces sound. As used herein, the term HOUSEHOLD (provided in uppercase letters to disambiguate from the user's domicile) is used to represent a collection of networked devices that are cooperating to provide an application or service. An instance of a HOUSEHOLD is identified with a household **10** (or household identifier).

In certain embodiments, a household identifier (HHID) is a short string or an identifier that is computer-generated to help ensure that it is unique. Accordingly, the network **610** can be characterized by a unique HHID and a unique set of configuration variables or parameters, such as channels (e.g., respective frequency bands), SSID (a sequence of alphanumeric characters as a name of a wireless network), and WEP keys (wired equivalent privacy or other security keys). In certain embodiments, SSID is set to be the same as HHID.

In certain embodiments, each HOUSEHOLD includes two types of network nodes: a control point (CP) and a zone player (ZP). The control point controls an overall network setup process and sequencing, including an automatic generation of required network parameters (e.g., WEP keys). In an embodiment, the CP also provides the user with a HOUSEHOLD configuration user interface. The CP function can be provided by a computer running a CP application module, or by a handheld controller (e.g., the controller **308**) also running a CP application module, for example. The zone player is any other device on the network that is placed to participate in the automatic configuration process. The ZP, as a notation used herein, includes the controller **308** or a computing device, for example.

In certain embodiments, configuration of a HOUSEHOLD involves multiple CPs and ZPs that rendezvous and establish a known configuration such that they can use a standard networking protocol (e.g., IP over Wired or Wireless Ethernet) for communication. In an embodiment, two types of networks/protocols are employed: Ethernet 802.3 and Wireless 802.11g. Interconnections between a CP and a ZP can use either of the networks/protocols. A device in the system as a member of a HOUSEHOLD can connect to both networks simultaneously. In an environment that has both networks in use, it is assumed that at least one device in a system is connected to both as a bridging device, thus providing bridging services between wired/wireless networks for others. The zone player **606** in FIG. **6** is shown to be connected to both networks, for example. The connectivity to the network **612** is based on Ethernet while the connectivity to other devices **602**, **604** and **608** is based on Wireless. It is understood, however, that in some embodiments each zone player **606**, **604**, **602** may access the Internet when retrieving media from the cloud (e.g., Internet) via the bridging device. For example, zone player **602** may contain a uniform resource locator (URL) that specifies an address to a particular audio track in the cloud. Using the URL, the zone player **602** may retrieve the audio track from the cloud, and ultimately play the audio out of one or more zone players.

VI. Example Music Sharing and Playback Configuration

Certain embodiments enable a user to stream music from a music-playing application (e.g., browser-based application, native music player, other multimedia application, and so on) to a local multimedia content playback (e.g., Sonos™) system. Certain embodiments provide secure systems and methods for multimedia content playback across a plurality of systems and locations. Certain embodiments facilitate integration between content partners and a playback system as well as supporting maintenance of such content and system.

FIG. **7** shows a system including a plurality of networks including a cloud-based network and at least one local playback network. The network includes a plurality of playback devices or players, though it is understood that the network may contain only one playback device. In certain embodiments, each player has an ability to retrieve its content for playback. Control and content retrieval can be distributed or centralized, for example. Input can include streaming content provider input, third party application input, mobile device input, user input, and/or other playback network input into the cloud for local distribution and playback.

As illustrated by the example system **700** of FIG. **7**, a plurality of content providers **720**-**750** can be connected to one or more local playback networks **760**-**770** via a cloud and/or other network **710**. Using the cloud **710**, a multimedia playback system **720** (e.g., Sonos™), a mobile device **730**, a third party application **740**, a retail location **750**, and so on can provide multimedia content (requested or otherwise) to local playback networks **760**, **770**. Within each local network **760**, **770**, a controller **762**, **772** and/or playback device **764**, **774** can provide a song identifier, song name, playlist identifier, playlist name, genre, preference, and so on, and/or simply receive content from a connected system via the cloud.

For example, a user listens to a third party music application (e.g., Pandora™ Rhapsody™, Spotify™, and so on) on her smart phone while commuting. She's enjoying the current channel and, as she walks in the door to her home, selects an option to continue playing that channel on her household music playback system (e.g., Sonos™). The playback system picks up from the same spot on the selected channel that was on her phone and outputs that content (e.g., that song) on speakers and/or other playback devices connected to the household playback system. A uniform resource indicator (URI) (e.g., a uniform resource locator (URL)) can be passed to a playback device to fetch content from a cloud and/or other networked source, for example. A playback device, such as a zone player, can fetch content on its own without use of a controller, for example. Once the zone player has a URL (or some other identification or address) for a song and/or playlist, the zone player can run on its own to fetch the content. Songs and/or other multimedia content can be retrieved from the Internet rather than a local device (e.g., a compact disc (CD)), for example. A third party application can open or utilize an application programming interface (API) to pass music to the household playback system without tight coupling to that household playback system.

In another example of an application determining a playlist and/or other content for playback, a user enjoys listening to music on an online music service (e.g., turntable.fm or other virtual room that a user can enter to choose from a plurality of online disc jockeys (DJs) deciding what to play next) using his Mac Book Pro™ at home. He likes the unique user experience the service offers, and he frequently hops from room to room discovering new music. To maximize sound quality, he plays the music on his household playback system (e.g., Sonos™). A button or other indicator can be added to the turntable.fm Web application to switch the content being played to the playback system for output (e.g., to the Sonos™ system rather than or in addition to the Mac Book™). While Web-based applications typically do not have access to items on a local network, certain embodiments enable a third-party Web-based application (e.g., Turntable.fm) to talk to a playback system (e.g., Sonos™) in a certain way (e.g., may have to log in with a username and password), and the identified user has the website send audio or audio and video down to a playback device (e.g., a zone player) on the playback system local network to play music there (or some other media).

In another example, a first user creates a playlist (e.g., a Spotify™ playlist). The first user visits a second user's house, pulls out her smart phone and shares her playlist by playing it on the second user's household playback (e.g., Sonos™) system using her third party (e.g., Spotify™) application. The first user may also go to the third party content provider's (e.g., Spotify's™) website and share her playlist on the second user's playback system.

Thus, certain embodiments provide cross-service linking such that a song identifier can be passed from one user and/or service to another to be fetched and played. A user having a playlist on his or her phone can visit a friend and, using her account on her friend's system, play a song to which she has an access right. A retrieved song can streamed locally to a user's phone, or an application can pass a song identifier to a local playback system which looks up the song identifier and finds an available audio stream to which the user has a right to play and then plays that song.

In another example, a user is staying in a hotel room or other facility including a local playback network. For example, a speaker and/or other playback device (e.g., a Sonos™ Play:3, Play: 5 and so on) in a hotel room can be utilized to play multimedia content to which the user has access from his or her playback network account, streaming audio source, third party application, and so on. Content can be output to one or more devices based on availability, access, configuration, priority, preference, and so on. In certain embodiments, a playback network includes a plurality of nodes, and each node has a capability to play sound in response to an input. Requested output is provided to a most logical connection, for example.

In certain embodiments, a phone device, a television device, and so on can be used to play music, audio, video and/or other multimedia content. In an example, a push button on a microphone or household intercom system to tell the kids dinner is ready is provided over the local playback network.

FIG. **8** shows a flow diagram for a method **800** to provide audio content to a local playback system. In the example method **800** of FIG. **8**, a third party application acts as a "virtual line-in" to the local playback system. At block **810**, streaming of music or other content from a third party application to a local content playback system is triggered. For example, a "Play to Sonos" button is pressed on a Rhapsody™ application. At block **820**, content is streamed to one or more components in a household playback network. The music may be streamed to predetermined zones or players in a household, for example. The music may be further directed to be played in different zones or players throughout the household. Playback on the local network can be facilitated to one or more zones/players based on a configuration (e.g., a zone scene, theme, and so on). Thus, certain embodiments allow a large degree of flexibility in where the music is actually played. For example, the music can be played in the kitchen, the family room, the patio, and so on. Further, the music may be redirected to different zones.

At block **830**, the incoming content (e.g., audio) stream is provided directly from a third party application or other external source to the local playback network for playback. For example, rather than passing track identifiers, an audio stream is provided to a Sonos household system for playback to one or more configured zones. At block **840**, the local playback system consumes the stream and plays it as it would other content on the local playback (e.g., Sonos™) network (e.g., via zones and so on). At block **850**, a playback device (e.g., a zone player, Play:3™, Play:5™, and so on) adds timing information to the streaming content signal (e.g., the device takes the streaming audio signal and repackages it for local synchronized playback). In some embodiments, timing information is not added to the signal unless two or more playback devices are configured to play the audio in synchrony.

FIG. **9** shows a flow diagram for a method **900** to provide audio content to a local playback system. In the example method **900** of FIG. **9**, a uniform resource indicator (URI) handler approach is provided for content output. At block **910**, a link or other reference is embedded in a third party application (e.g., Facebook™ or Twitter). At block **920**, when the link is selected (e.g., clicked), a local playback (e.g., Sonos™) controller, if available, is launched. At block **930**, the application (e.g., accessed on a phone, tablet, computer, and so on) passes a URI for associated content (e.g., an audio track and so on) to a local playback system (e.g., Sonos™) controller. At block **940**, the local controller outputs the associated content (e.g., plays the music) via the URI. For example, music is streamed from the cloud to one or more playback devices on the local playback network.

In certain embodiments, an application associated with the operating system can register to handle all URIs (URLs) that start with a certain prefix and can define how data is encoded into those URLs so a local playback system application can generate a link (e.g., "sonos:") and put that link into a message (e.g., email, text message, instant message (IM), etc.). The local playback application registered to handle such URLs can parse the URLs to determine what song, playlist, streaming radio station, etc., to play. This launches the controller application. For example, if a first listener likes a song and tweets that song, Twitter™ can include a clickable link which launches a playback application and starts the music playing on a local playback system if the local system can find the song (e.g., if have the application, if have rights/access to the song, etc.). In certain embodiments, the system knows to trigger the receiving user's system rather than the sending user's system to play associated content based on the transmitted link/identifier.

For example, an application can register with the system to handle all URLs that start with a custom prefix (e.g., an HTTP "scheme"). For instance, Sonos controller apps can register to handle any URL that begins with "sonos:" or "x-sonos:". In certain embodiments, a playback system provider can define and publish the format of its URLs so

that any third party application can create a link or reference to content. A large amount of data can be encoded into a URL using query parameters, for example.

In an example, when an application tries to "open" or "browse" to a URL, the system checks to see if the scheme of the URL matches the "sonos:" scheme that has been registered with the application. If a URL handler application is found, the system launches that application (e.g., the application can but does not need to be running in the background) and passes the URL to the application. The application then parses the URL and executes functionality based on the data in the URL. For example, the URL can contain the name of a music service and a playlist identifier from that service, plus the name of a Sonos™ Zone Player, causing the Sonos controller to start that playlist playing on that zone.

FIG. **10** shows a flow diagram for a method **1000** to provide audio content to a local playback system. In the example method **1000** of FIG. **10**, at block **1010**, a link or other reference is embedded in a third party application (e.g., Facebook™). At block **1020**, when the link is selected, a playback system (e.g., Sonos™) server is contacted and provided with information regarding selected content for playback. For example, rather than launching a local controller application, a server is contacted regarding music for playback on a local network. At block **1030**, using the provided information, the server identifies and provides the content locally on a user's local playback system. For example, the server can then start playing the music directly on the user's Sonos™ system (e.g., without going through a Sonos™ controller application).

In certain embodiments, a "single sign-on" technology is provided so that the user does not need to re-enter a username and password in order to authenticate to the playback server. Example single sign-on technologies include Facebook Connect™, Windows Live ID™, etc.

In certain embodiments, instead of using a specialized link, such as a "sonos:" link, a normal URL can be used to point to a playback system (e.g., Sonos™) webserver, which generates links with special data embedded in the link. A playback system is identified, and content identified by the URL can be playing at via the local playback network (e.g., mesh network configured for home, hotel room, etc.). Parameters such as authentication, security, location, and so on can be configured for local playback of remote content.

FIG. **11** shows a flow diagram for a method **1100** to provide audio content to a local playback system. The example method **1100** of FIG. **11** provides a "throw it over the wall" approach to content delivery to a local playback system. At block **1110**, a third party application provides a multimedia playback device (e.g., a Sonos™ zone player (ZP)) with enough information about content (e.g., an audio track) so that, at block **1120**, the local playback system (e.g., SonosNet™) can directly access a source of the content and, at block **1130**, play the content directly off the network (e.g., the Internet) or cloud.

In certain embodiments, a local playback controller application is not involved. Information passed over to the local playback device may include an identifier for a single track, a playlist, a streaming radio station, a programmed radio station, and so on. This information can also include a current play position within a list to enable near-seamless "handoff" of music from a portable device to a local playback system. Once the music information is handed from the third-party application to the local playback system, there is no further synchronization between the two systems.

A connection between the third-party application and the local playback device (e.g., Sonos ZonePlayer™) can be direct over a local area network (LAN), remote through a proxy server in the cloud, and so on. A LAN delivery approach may be easier to integrate into "native" applications (e.g., applications written for iOS or Android), and a proxy server approach may be easier for third party applications that are browser-based, for example.

In certain embodiments, information is provided from a third party application to a local playback system without being routed through or by a controller application. Here, the third party application is communicating with the multimedia playback device (e.g., a Sonos ZonePlayer™). Information can be passed locally, rather than through the Internet, for example. The local playback device accesses the Internet to find content to stream, and the third party application takes the place of the controller application (e.g., throw it over the wall—the application passes information and the local playback system runs it).

Certain embodiments provide an approach similar to the "throw it over the wall" or one way communication approach of FIG. **11** except that the third party application not only tells the local playback system what to play, but also maintains two-way communication with the local playback (e.g., Sonos™) system. Two-way communication helps enable features such as keeping a local playback queue synchronized with a queue that the user is editing/managing in the third party application; allow the third party application to know what is currently playing on the local playback system; allow integrated transport control between the third party application and the local playback system; and so on.

In certain embodiments, a local playback system can pass information back to a third party application to indicate a current point of playback (e.g., now playing a third song in a playlist, fourth song in the playlist, and so on). The local playback system can pass parameter information, such as a change in volume, from a local multimedia playback device to the third party application so the application can reflect the change in volume to the user via its graphical user interface. The third party application can instruct the local playback system to skip a song, go to a certain location, and so on.

Certain embodiments provide a third party mode that allows users to select from any local playback network (e.g., Sonos™) controller to listen to audio from one or more third party applications on their smartphones or tablets (e.g., Android™ devices). For example, a user may be using a local playback network controller application and now wants a third party application to appear as an audio source within the controller application. The user can then select the controller application that he or she wishes to play audio from the third party application, for example.

Certain embodiments provide queue management to allow a third party application to control a local playback queue. That is, the local playback system has a queue, but the third party application allows users to add, delete and so on from the queue, for example. Rather than switch from content that the user is currently playing, the local playback system allows a user to create a playlist on the fly. For example, if last.fm users vote that they do not like a song and it should be skipped, then the local playback system will skip it.

Certain embodiments allow a third party application to override a local playback queue with its own application-specific queue. The local playback system periodically fetches a short list of tracks to play next. The list of tracks to play is determined by the third-party application, for

example. In certain embodiments, a shared queue is provided between the local playback system and the third party application to keep the local system and application synchronized.

Certain embodiments allow control of playback system functions and/or settings via an external (e.g., third party) application. For example, a local playback system can allow volume control, play/pause, and so on and can interact with an application running on a given platform/operating system (OS). Certain embodiments provide a Web API that can be used to access functionality.

Certain embodiments facilitate control of a local playback system from outside a household or other location at which the local playback network is configured. For example, a user can queue up music while away from his or her house. The application can facilitate setup and/or configuration. For example, a third party application may ask the user to enter a Sonos customer email address and password. The application can then make a request to a Sonos server in the cloud to determine the zone groups on which music can be played.

Various inventions have been described in sufficient detail with a certain degree of particularity. It is understood to those skilled in the art that the present disclosure of embodiments has been made by way of examples only and that numerous changes in the arrangement and combination of parts can be resorted without departing from the spirit and scope of the present disclosure as claimed. While the embodiments discussed herein can appear to include some limitations as to the presentation of the information units, in terms of the format and arrangement, the embodiments have applicability well beyond such embodiment, which can be appreciated by those skilled in the art. Accordingly, the scope of the present disclosure is defined by the appended claims rather than the forgoing description of embodiments.

The invention claimed is:

1. A method comprising:

causing, via a control device, a graphical interface to display a control interface including one or more transport controls to control playback by the control device;

after connecting to a local area network via a network interface, identifying, via the control device, playback devices connected to the local area network;

causing, via the control device, the graphical interface to display a selectable option for transferring playback from the control device;

detecting, via the control device, a set of inputs to transfer playback from the control device to a particular playback device, wherein the set of inputs comprises: (i) a selection of the selectable option for transferring playback from the control device and (ii) a selection of the particular playback device from the identified playback devices connected to the local area network;

after detecting the set of inputs to transfer playback from the control device to the particular playback device, causing playback to be transferred from the control device to the particular playback device, wherein transferring playback from the control device to the particular playback device comprises:

(a) causing one or more first cloud servers to add multimedia content to a local playback queue on the particular playback device, wherein adding the multimedia content to the local playback queue comprises the one or more first cloud servers adding, to the local playback queue, one or more resource locators corresponding to respective locations of the multimedia content at one or more second cloud servers of a streaming content service;

(b) causing playback at the control device to be stopped; and

(c) modifying the one or more transport controls of the control interface to control playback by the playback device; and

causing the particular playback device to play back the multimedia content, wherein the particular playback device playing back the multimedia content comprises the particular playback device retrieving the multimedia content from one or more second cloud servers of a streaming content service and playing back the retrieved multimedia content.

2. The method of claim **1**, wherein detecting the set of inputs to transfer playback from the control device to the particular playback device comprises detecting a set of inputs to transfer playback from the control device to a particular zone of a media playback system that includes the particular playback device as a first channel of a stereo pair and an additional playback device as a second channel of the stereo pair, wherein modifying the one or more transport controls of the control interface to control playback by the particular playback device comprises causing the one or more transport controls of the control interface to control playback by the particular playback device and the additional playback device, and wherein the particular playback device playing back the retrieved multimedia content comprises the particular playback device and the additional playback device playing back the multimedia content as the stereo pair.

3. The method of claim **1**, wherein detecting the set of inputs to transfer playback from the control device to the particular playback device comprises detecting a set of inputs to transfer playback from the control device to a particular zone group of a media particular playback system that includes a first zone and a second zone, wherein the first zone includes the particular playback device and the second zone includes at least one additional playback device, wherein modifying the one or more transport controls of the control interface to control playback by the playback device comprises causing the one or more transport controls of the control interface to control playback by the particular playback device and the at least one additional playback device in synchrony, and wherein the particular playback device playing back the retrieved multimedia content comprises the particular playback device and the at least one additional playback device playing back the multimedia content in synchrony.

4. The method of claim **1**, wherein the control interface is displayed by an application associated with the streaming content service, and wherein the set of inputs further comprises detecting an input to select a link in the application associated with the streaming content service and wherein selection of the link launches a second application to facilitate retrieving the multimedia content by the particular playback device from a particular source indicated by a resource locator.

5. The method of claim **1**, wherein the control interface is displayed by an application associated with the streaming content service, and wherein the set of inputs further comprises detecting an input to select a link in the application associated with the streaming content service and wherein selection of the link causes the control device to transmit information to the one or more first cloud servers to add multimedia content to the local playback queue on the particular playback device.

6. The method of claim **1**, further comprising detecting, via the control device, a set of inputs to transfer playback

from the playback device back to the control device, wherein transferring playback from the playback device back to the control device comprises:

causing playback at the playback device to be stopped; and

modifying the one or more transport controls of the control interface to control playback by the control device.

7. The method of claim **1**, wherein causing the graphical interface to display the control interface including one or more transport controls to control playback by the control device comprises causing the graphical interface to display a control interface that includes the one or more transport controls in a particular arrangement on the graphical interface, and wherein modifying the one or more transport controls of the control interface to control playback by the particular playback device comprises causing the graphical interface to display the one or more transport controls to control playback by the particular playback device in the particular arrangement.

8. The method of claim **1**, wherein causing the one or more first cloud servers to add multimedia content to the local playback queue comprises causing an identifier of the multimedia content to be added to the local playback queue, wherein the identifier indicates a particular source of the multimedia content at the one or more second cloud servers of the streaming content service, wherein the particular playback device receives the multimedia content from the particular source at the one or more second cloud servers of the streaming content service.

9. The method of claim **1**, wherein causing one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device comprises sending a message to the streaming content service that causes the one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device.

10. The method of claim **1**, wherein detecting the set of inputs comprises detecting a selection of the multimedia content.

11. The method of claim **1**, wherein detecting the set of inputs comprises detecting an input that causes playback at the control device to be stopped.

12. The method of claim **1**, wherein detecting the set of inputs comprises detecting selection of a button on the control interface.

13. A tangible, non-transitory computer readable storage medium including instructions for execution by a processor, the instructions, when executed, cause a control device to implement a method comprising:

causing a graphical interface to display a control interface including one or more transport controls to control playback by the control device;

after connecting to a local area network via a network interface, identifying playback devices connected to the local area network;

causing the graphical interface to display a selectable option for transferring playback from the control device;

detecting a set of inputs to transfer playback from the control device to a particular playback device, wherein the set of inputs comprises: (i) a selection of the selectable option for transferring playback from the control device and (ii) a selection of the particular playback device from the identified playback devices connected to the local area network:

after detecting the set of inputs to transfer playback from the control device to the particular playback device, causing playback to be transferred from the control device to the particular playback device, wherein transferring playback from the control device to the particular playback device comprises:

(a) causing one or more first cloud servers to add multimedia content to a local playback queue on the particular playback device, wherein adding the multimedia content to the local playback queue comprises the one or more first cloud servers adding, to the local playback queue, one or more resource locators corresponding to respective locations of the multimedia content at one or more second cloud servers of a streaming content service;

(b) causing playback at the control device to be stopped; and

(c) modifying the one or more transport controls of the control interface to control playback by the playback device; and

causing the particular playback device to play back the multimedia content, wherein the particular playback device playing back the multimedia content comprises the particular playback device retrieving the multimedia content from one or more second cloud servers of a streaming content service and playing back the retrieved multimedia content.

14. The tangible, non-transitory computer readable medium of claim **13**, wherein detecting the set of inputs to transfer playback from the control device to the particular playback device comprises detecting a set of inputs to transfer playback from the control device to a particular zone of a media playback system that includes the particular playback device as a first channel of a stereo pair and an additional playback device as a second channel of the stereo pair, wherein modifying the one or more transport controls of the control interface to control playback by the particular playback device comprises causing the one or more transport controls of the control interface to control playback by the particular playback device and the additional playback device, and wherein the particular playback device playing back the retrieved multimedia content comprises the particular playback device and the additional playback device playing back the multimedia content as the stereo pair.

15. The tangible, non-transitory computer readable medium of claim **13**, wherein detecting the set of inputs to transfer playback from the control device to the particular playback device comprises detecting a set of inputs to transfer playback from the control device to a particular zone group of a media particular playback system that includes a first zone and a second zone, wherein the first zone includes the particular playback device and the second zone includes at least one additional playback device, wherein modifying the one or more transport controls of the control interface to control playback by the playback device comprises causing the one or more transport controls of the control interface to control playback by the particular playback device and the at least one additional playback device in synchrony, and wherein the particular playback device playing back the retrieved multimedia content comprises the particular playback device and the at least one additional playback device playing back the multimedia content in synchrony.

16. The tangible, non-transitory computer readable medium of claim **13**, wherein the control interface is displayed by an application associated with the streaming content service, and wherein the set of inputs further com-

prises detecting an input to select a link in the application associated with the streaming content service and wherein selection of the link launches a second application to facilitate retrieving the multimedia content by the particular playback device from a particular source indicated by a resource locator.

17. The tangible, non-transitory computer readable medium of claim **13**, wherein the control interface is displayed by an application associated with the streaming content service, and wherein the set of inputs further comprises detecting an input to select a link in the application associated with the streaming content service and wherein selection of the link causes the control device to transmit information to the one or more first cloud servers to add multimedia content to the local playback queue on the particular playback device.

18. The tangible, non-transitory computer readable medium of claim **13**, wherein the method further comprises detecting a set of inputs to transfer playback from the playback device back to the control device, wherein transferring playback from the playback device back to the control device comprises:

causing playback at the playback device to be stopped; and

modifying the one or more transport controls of the control interface to control playback by the control device.

19. The tangible, non-transitory computer readable medium of claim **13**, wherein causing the graphical interface to display the control interface including one or more transport controls to control playback by the control device comprises causing the graphical interface to display a control interface that includes the one or more transport controls in a particular arrangement on the graphical interface, and wherein modifying the one or more transport controls of the control interface to control playback by the playback device comprises causing the graphical interface to display the one or more transport controls to control playback by the playback device in the particular arrangement.

20. The tangible, non-transitory computer readable medium of claim **13**, wherein causing the one or more first cloud servers to add multimedia content to the local playback queue on the particular playback device comprises causing an identifier of the multimedia content to be added to the local playback queue, wherein the identifier indicates a particular source of the multimedia content at the one or more second cloud servers of the streaming content service, wherein the particular playback device receives the multimedia content from the particular source at the one or more second cloud servers of the streaming content service.

21. The tangible, non-transitory computer readable medium of claim **13**, wherein causing one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device comprises sending a message to the streaming content service that causes the one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device.

22. The tangible, non-transitory computer readable medium of claim **13**, wherein detecting the set of inputs comprises detecting a selection of the multimedia content.

23. The tangible, non-transitory computer readable medium of claim **13**, wherein detecting the set of inputs comprises detecting an input that causes playback at the control device to be stopped.

24. The tangible, non-transitory computer readable medium of claim **13**, wherein detecting the set of inputs comprises detecting selection of a button on the control interface.

25. A control device comprising:

a graphical interface;

a wireless communication interface to communicate with a playback device;

one or more processors;

tangible non-transitory computer-readable media having instructions encoded therein, wherein the instructions, when executed by the one or more processors, cause the control device to perform functions comprising:

causing the graphical interface to display a control interface including one or more transport controls to control playback by the control device;

after connecting to a local area network via the wireless communication interface, identifying playback devices connected to the local area network;

causing the graphical interface to display a selectable option for transferring playback from the control device;

detecting a set of inputs to transfer playback from the control device to a particular playback device, wherein the set of inputs comprises: (i) a selection of the selectable option for transferring playback from the control device and (ii) a selection of the particular playback device from the identified playback devices connected to the local area network:

after detecting the set of inputs to transfer playback from the control device to the particular playback device, causing playback to be transferred from the control device to the particular playback device, wherein transferring playback from the control device to the particular playback device comprises:

(a) causing one or more first cloud servers to add multimedia content to a local playback queue on the particular playback device, wherein adding the multimedia content to the local playback queue comprises the one or more first cloud servers adding, to the local playback queue, one or more resource locators corresponding to respective locations of the multimedia content at one or more second cloud servers of a streaming content service;

(b) causing playback at the control device to be stopped; and

(c) modifying the one or more transport controls of the control interface to control playback by the playback device; and

causing the particular playback device to play back the multimedia content, wherein the particular playback device playing back the multimedia content comprises the particular playback device retrieving the multimedia content from one or more second cloud servers of a streaming content service and playing back the retrieved multimedia content.

26. The control device of claim **25**, wherein detecting the set of inputs to transfer playback from the control device to the particular playback device comprises detecting a set of inputs to transfer playback from the control device to a particular zone group of a media particular playback system that includes a first zone and a second zone, wherein the first zone includes the particular playback device and the second zone includes at least one additional playback device, wherein modifying the one or more transport controls of the

control interface to control playback by the playback device comprises causing the one or more transport controls of the control interface to control playback by the particular playback device and the at least one additional playback device in synchrony, and wherein the particular playback device playing back the retrieved multimedia content comprises the particular playback device and the at least one additional playback device playing back the multimedia content in synchrony.

27. The control device of claim **25**, wherein detecting the set of inputs comprises detecting a selection of the multimedia content.

28. The control device of claim **25**, wherein detecting the set of inputs comprises detecting an input that causes playback at the control device to be stopped.

29. The control device of claim **25**, wherein detecting the set of inputs comprises detecting selection of a button on the control interface.

* * * * *

U.S. DEPARTMENT OF COMMERCE
United States Patent and Trademark Office

July 31, 2023

THIS IS TO CERTIFY that the attached document is a list of the papers that comprise the record before the Patent Trial and Appeal Board (PTAB) for the *Inter Partes Review* proceeding identified below:

GOOGLE LLC,
Petitioner,

v.

SONOS, INC.,
Patent Owner.

Case: IPR2021-01563
Patent 9,967,615 B2

By authority of the
DIRECTOR OF THE UNITED STATES
PATENT AND TRADEMARK OFFICE

Orchidesh Rushenas
Certifying Officer

Prosecution History for IPR2021-01563

Date	Document
09/28/2021	Petition for *Inter Partes* Review of U.S. Patent No. 9,967,615
09/28/2021	Petitioner's Power of Attorney
10/19/2021	Patent Owner's Mandatory Notice
10/19/2021	Patent Owner's Power of Attorney
10/25/2021	Notice of Filing Date Accorded to Petition and Time for Filing Patent Owner Preliminary Response
01/25/2022	Patent Owner's Preliminary Response
02/11/2022	Patent Owner's Motion to Dismiss
02/14/2022	Petitioner's Reply to Patent Owner's Preliminary Response
02/14/2022	Petitioner's Updated Exhibit List
02/22/2022	Petitioner's Opposition to Patent Owner's Motion to Dismiss
02/22/2022	Petitioner's Updated Exhibit List
02/24/2022	Patent Owner's Sur-Reply in Support of its Preliminary Response
04/12/2022	Order Denying Patent Owner's Motion to Dismiss, *35 U.S.C. § 315(a)(1)*
04/12/2022	Decision - Institute *Inter Partes* Review
04/12/2022	Scheduling Order
04/26/2022	Patent Owner's Objections to Evidence
06/24/2022	Patent Owner's Notice of Deposition of Dr. Harry Bims
06/24/2022	Patent Owner's Motion for Extension of Time
06/27/2022	Petitioner's Opposition to Patent Owner's Motion for Extension of Time
06/27/2022	Petitioner's Updated Exhibit List
06/29/2022	Order Granting-In-Part Patent Owner's Motion to Extend Time
07/11/2022	Patent Owner's Response
09/29/2022	Petitioner's Reply
09/29/2022	Petitioner's Updated Exhibit List
10/25/2022	Patent Owner's Sur-Reply
12/01/2022	Petitioner's Request for Oral Hearing
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12/05/2022	Order Setting Oral Argument – *37 C.F.R. § 42.70*
01/12/2023	Petitioner's LEAP Practitioner Request and Verification Form
01/13/2023	Petitioner's Updated Exhibit List
01/13/2023	Patent Owner's Oral Hearing Demonstratives
01/31/2023	Oral Hearing Transcript

Date	Document
04/10/2023	Final Written Decision
06/12/2023	Patent Owner's Notice of Appeal to the U.S. Court of Appeals for the Federal Circuit

Filed: September 28, 2021

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

SONOS, INC.,
Patent Owner.

Case No. IPR2021-01563
U.S. Patent No. 9,967,615

PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 9,967,615

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Ex. 1001	U.S. Patent No. 9,967,615 to Coburn ("the '615 patent")
Ex. 1002	'615 Patent Prosecution History (U.S. App. No. 14/628,952)
Ex. 1003	Declaration of Dr. Harry Bims ("Bims")
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Ex. 1006	U.S. Patent No. 8,799,496 to Phillips et al. ("Phillips")
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Ex. 1009	U.S. Patent No. 8,724,600 to Ramsay et al. ("Ramsay")
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Ex. 1011	*Sonos, Inc. v. Google LLC*, 6:20-cv-00881, Dkt. 60, Sonos' Claim Construction Brief (W.D. Tex. April 27, 2021)
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Ex. 1017	*Sonos, Inc. v. Google LLC*, 6:20-cv-00881, Preliminary Constructions Order (W.D. Tex. August 9, 2021)
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Ex. 1019	Declaration of Douglas C. Schmidt, *Sonos, Inc. v. Google LLC*, 6:20-cv-00881-ADA (W.D. Tex. April 27, 2021), ECF No. 60-24
Ex. 1020	*In re: Google LLC*, Case No. 2021-170, Order Granting Petition for Writ of Mandamus (Fed. Cir. 2021)
Ex. 1021	U.S. Patent No. 8,611,317 to Banerjea
Ex. 1022	U.S. Patent No. 8,184,641 to Alt et al.
Ex. 1023	Shiann-Ysong Sheu and Chih-Chiang Wu, *Dynamic access point approach (DAPA) for IEEE 802.11 wireless LANs*, Gateway to 21st Century Communications Village. VTC 1999-Fall. IEEE VTS 50th Vehicular Technology Conference (Cat. No. 99CH36324), 1999, pp. 2646-265.
Ex. 1024	Correspondence to Sonos (September 27, 2021)

I. Introduction

Petitioner requests *inter partes* review of claims 1-2, 6-14, 18-25, and 27-29 (the challenged claims) of U.S. Patent No. 9,967,615. The claims relate to a networked media playback system that plays remote content provided by a remote media service. '615 Pat., Abstract, 1:19-29. A control device (e.g., computer or mobile phone) connects to a local area network and identifies playback devices connected to the same network. *Id.*, claims 1, 13, 25. It has a graphical user interface (GUI) with "transport controls" to control playback (e.g., resume, pause, play, forward, etc.), a "selectable option" to transfer playback, and other options to select a particular playback device for playback from a set of identified playback devices. *Id.*, claims 1, 13, 25. When a user transfers playback to a particular playback device, a first cloud server adds multimedia content to the local playback queue on the particular playback device including resource locators identifying locations of multimedia content at a second cloud server. *Id.* Transferring also includes stopping playback at the control device and modifying the transport controls to control playback at the playback device. *Id.* The playback device retrieves multimedia content from the second cloud server to play back. *Id.*

But prior-art patents and patent publications already disclosed such systems. For example, Al-Shaykh and Qureshey disclose the same dual-mode process where

the playback is transferred from a control device to a particular playback device. *See infra* Section III.

Accordingly, Petitioner requests that the Board institute review and cancel the challenged claims.

II. Statement of Precise Relief Requested for Each Claim Challenged

Petitioners request review under 35 U.S.C. § 311 and cancelation of claims 1-2, 6-14, 18-25, and 27-29 in view of the following references, which are prior art under at least one of pre-AIA 35 U.S.C. §§ 102(a), 102(b), and 102(e):

Name	U.S. Pat./Pub. Number	Filing Date	Publication Date
Al-Shaykh	2011/0131520	Nov. 29, 2010	Jun. 2, 2011
Qureshey	8,050,652	Nov. 27, 2006	Apr. 19, 2007
Phillips	8,799,496	Jul. 19, 2010	May 10, 2012
Ramsay	8,724,600	Jan. 7, 2009	Jul. 16, 2009

The following proposed obviousness grounds render the challenged claims unpatentable.

Ground	Combined References	Claims
I	Al-Shaykh and Qureshey	1, 6-13, 18-25, 27-29
II	Al-Shaykh, Qureshey, and Phillips	1, 6-13, 18-25, 27-29

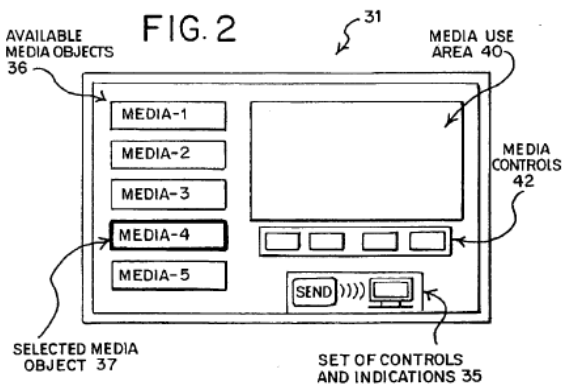
III and IV	Al-Shaykh, Qureshey, and Ramsay or Al-Shaykh, Qureshey, Phillips, and Ramsay	2 and 14

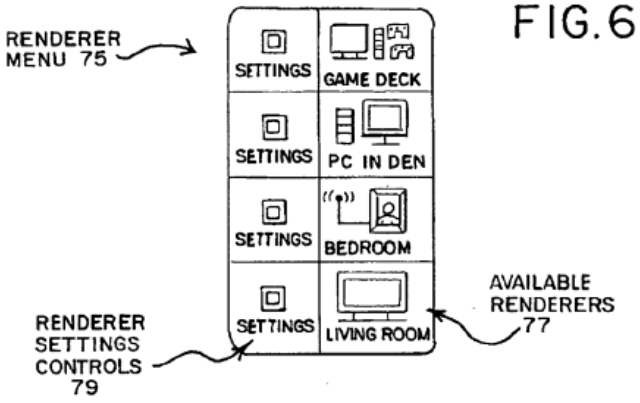
III. Overview of Prior Art

The '615 patent was filed on February 23, 2015, and claims priority to the filing date of U.S. Non-Provisional Patent No. 9,654,821, which is December 30, 2011. Thus, December 30, 2011, is the '615 patent's earliest possible priority date.

A. Al-Shaykh

Al-Shaykh discloses a networked playback system operating in a "residential local area network" in which a user can switch playback from a mobile control device to external rendering on playback rendering devices (e.g., stereo, speaker, television, etc.). Al-Shaykh, Abstract, [0005], [0010], [0013], [0078], [0081]. The mobile device includes a graphic user interface (GUI) with media control buttons that initially can be used to control playback at the mobile device and subsequently used to control playback at the playback device once playback is transferred. *Id.*, [0088], [0092], [0132], Fig. 2. The GUI further includes selectable buttons to (i) transfer playback from the mobile device to the rendering device, e.g., set of controls and indications 35 in Fig. 2, and (ii) chose a particular rendering device from a list of available devices that are connected to a local network, e.g., selecting an available renderer 77 from renderer menu 75, as shown in Fig. 6. *Id.*, [0089], [0099], [0105-07], [0133-34], [0118-23], Figs. 2-6.





Al-Shaykh, Figures 2 and 6

After a user provides input to transfer playback to a particular rendering device, the rendering device directly retrieves media content to playback from a remote content service that is associated with a remote content provider. *Id.*, [0020], [0093-95]. The content is retrieved through a connection from the home network to other networks, such as the Internet. *Id.*, [0080], [0004].

Al-Shaykh is analogous to the ’615 patent because it is in the same field of endeavor, providing functionality to transfer media playback from one device to another. ’615 Patent, Abstract, Claim 1; *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004); *see* Bims, ¶¶41-48. For example, Al-Shaykh, like the ’615 patent, explains that it is directed to “transfer[ing] media content from a mobile device to a home network [including] … rendering devices in the home network” Al-Shaykh, Abstract. Thus, Al-Shaykh is analogous art to the ’615 patent. *In re Bigio*, 381 F.3d at 1325.

B. Qureshey

Qureshey similarly discloses a networked playback system containing a PC device (e.g., PC IPAN Client in Fig. 11) and a "network-enabled audio device" (e.g., Device B in Fig. 11). Qureshey, 3:34-39, 16:56-60, Figs. 1-2, 11, 15.

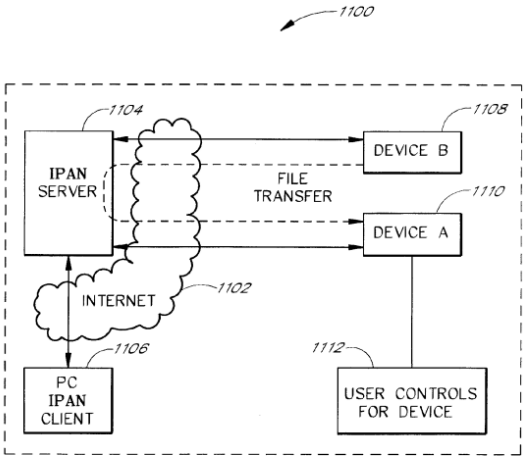


FIG. 11

Qureshey, Figure 11

It generally describes using software on a PC device to add information related to the content into the storage of the audio device and control playback of content on the audio device from various audio sources. *Id.*, 23:28-50, 24:31-25:41, 21:62-67, 24:26-30, Figs. 6B, 17A-17H.

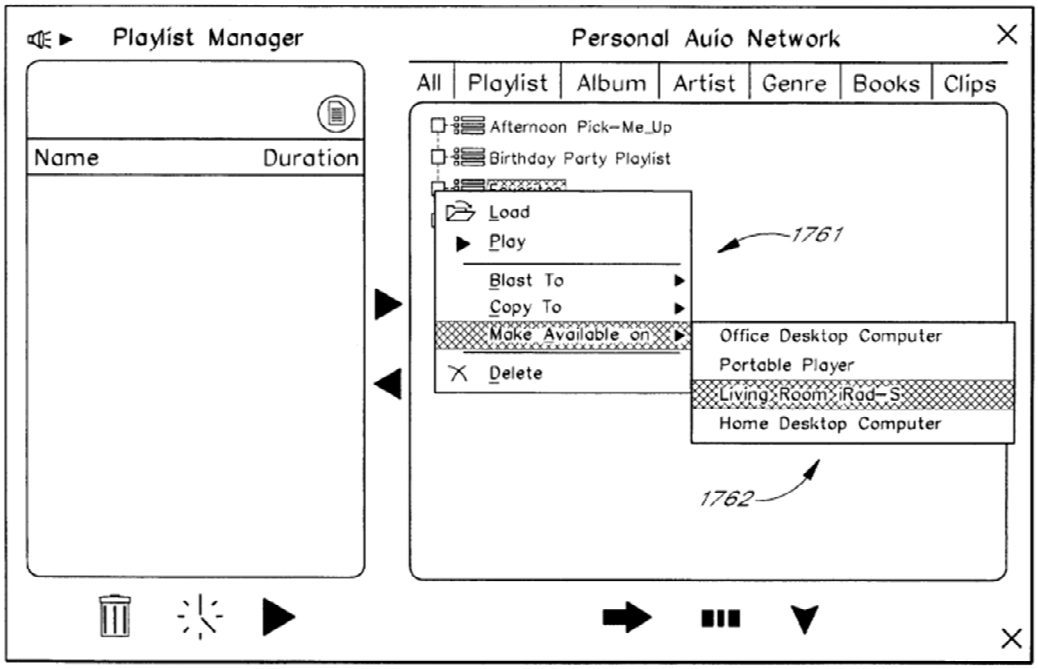


FIG. 17C

Qureshey, Figure 17C

Qureshey provides disclosures detailing how a POSITA may effectuate transferring of playback from one device to another device, as disclosed in Al-Shaykh and described in Section III.A. For example, Qureshey's PC device controls and manages the network-enabled audio device, including the storage and playback of playlists on the audio device. *Id*. To playback content on the audio device, Qureshey's system utilizes an "IPAN server" that adds playlists of a list of audio files and uniform resource locators (URLs) in the storage space of the audio device. *Id.* The URLs identify the source and location of the content that can be played back. *Id.*, 3:45-56, 7:47-65, 10:64-11:2, 21:62-67, 22:43-67. The URLs

allow the network-enabled audio device to retrieve audio content from various remote sources. *Id.*, 34:5-35, 22:48-58, 14:32-47, 2:40-46, 4:62-64, Fig. 6B. Thus, Qureshey's IPAN server helps ensure the network-enabled audio device can retrieve content to playback from remote sources.

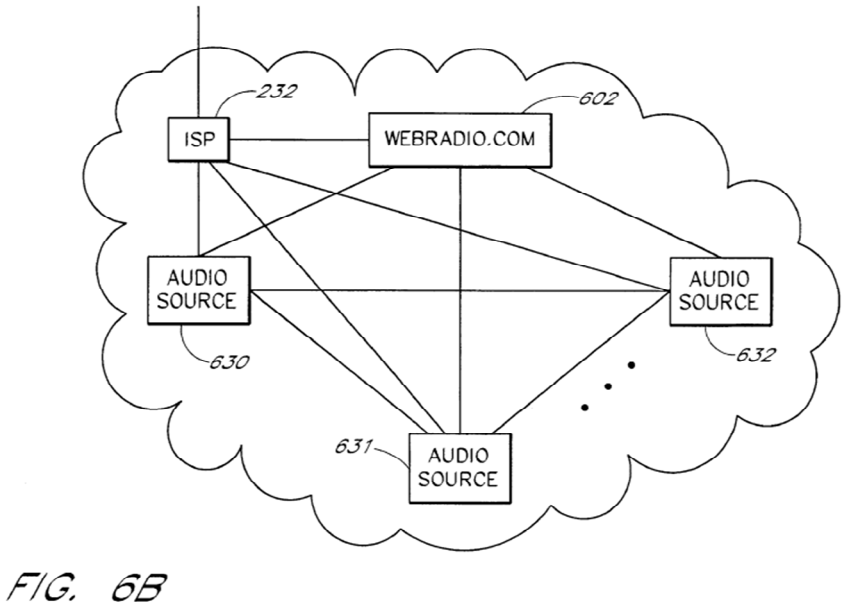


FIG. 6B

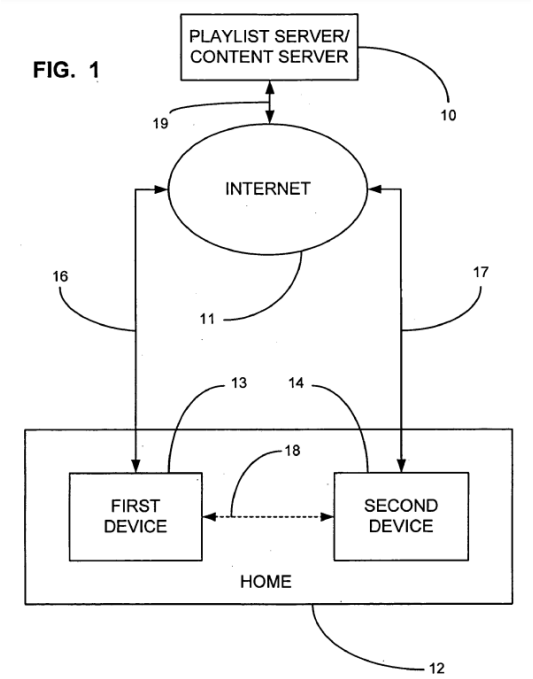
Qureshey, Figure 6B

Qureshey is analogous to the '615 patent because it is in the same field of endeavor, providing functionality to "facilitate connection to a multimedia playback network" including the transfer and distribution of multimedia content over the Internet to playback devices. '615 Patent, Abstract, Claim 1; *In re Bigio*, 381 F.3d at 1325; *see* Bims, ¶¶49-57. For example, Qureshey, like the '615 patent, explains that it is directed to the "the field of audio file transfers and, more particularly, relates to the field of management and distribution of audio files over

a computer network such as the Internet," including to network-enabled audio devices. Qureshey, 1:20-25, 2:15-33. Thus, Qureshey is analogous art to the '615 patent. *In re Bigio*, 381 F.3d at 1325.

C. Other Art in the Field

At the time of the invention, other art also already disclosed the subject matter claimed by the '615 patent. *See* Bims, ¶¶58-63; For example, Weel also discloses a networked playback system including a first device (e.g., "handheld portable device") that acts as a remote control for a second device (e.g., "music rendering device" such as "one or more smart speakers") within a local area network. Weel, [0016-17], [0071], [0077-78], Fig. 1. The first device may playback the content itself or transfer playback to a second device. *Id.*, [0088], [0105-117]. It includes a display and keypad to allow users to select songs for playback and a second device to play the song. *Id.*, [0080], [0105-06], Fig. 2.



Weel, Figure 1

Weel provides disclosures detailing how a POSITA may effectuate transferring of playback from one device to another device, as disclosed in Al-Shaykh and described in Section III.A. For example, after a user selects a second device for playback of content, the playlist server stores playlists. Weel, [0092], [0111]. The second device takes over playback of content that was originally being played at the first device and the second device retrieves content for playback from remote sources. *Id.*, [0090], [0100-01], [0084], [0086].

IV. The '615 Patent

The '615 patent discloses allowing a user to transfer streaming of remote content from a computing device (e.g., laptop or mobile phone) to a playback device

(e.g., speaker, multimedia unit (such as a television), etc.) in a local area network. '615 Pat., 1:19-28, 2:6-25, 3:28-31, 12:44-67, 13:14-22, 13:54-56; *see* Bims, ¶¶64-67. The computing device or controller (used interchangeably) provides a GUI for "navigat[ing] a playlist of many multimedia items and [] control[ing] operations of one or more [playback devices]." '615 Pat., 3:28-33, 9:10-48, 11:39-44.

A local playback network includes playback devices and a computing device connected to the "cloud (e.g., Internet)." *Id.*, 11:58-12:67. This allows either device to fetch content from a third-party service via the cloud or Internet. *Id.*

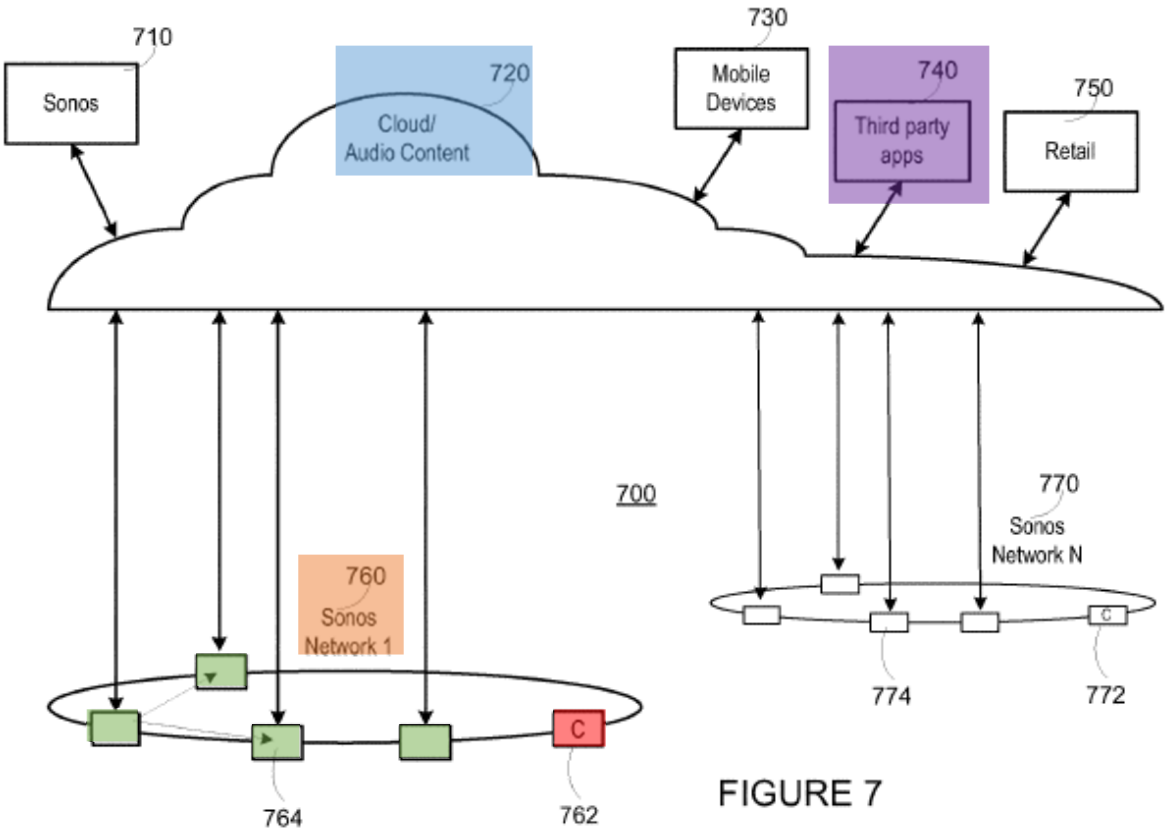


FIGURE 7

'615 Pat., Figure 7

When a playback device is configured for playback of content, it can "access the Internet [to] retriev[e] media from the cloud (e.g., Internet)." "For example, zone player 602 may contain a uniform resource locator (URL) that specifies an address to a particular audio track in the cloud." *Id.*, at 11:65-67.

V. The Level of Ordinary Skill in the Art

A POSITA would have had a bachelor's degree in physics, mechanical engineering, electrical engineering, or audio engineering (or an equivalent degree), and three years of experience designing or implementing networked wireless systems related to streaming media over the Internet. Bims, ¶¶20-23. With more education, for example, postgraduate degrees and/or study, less experience is needed to attain an ordinary level of skill in the art. Similarly, more experience can substitute for formal education. *Id.* Sonos proposed a slightly different level of ordinary skill in the art; however, the differences are immaterial to the outcome. *See* Ex. 1019 at ¶ 27; Bims, ¶24.

VI. Claim Construction

The Board construes claims consistent with *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b). Claims should only be construed to the extent necessary to resolve a controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

In the related litigation, before the case was transferred, the District Court for the Western District of Texas held that the following terms that appear in the '615 patent should be construed to their plain and ordinary meanings: "multimedia," "network interface," "playback device," and "local area network." Exs. 1016-1017. Additionally, although dropped from consideration before argument and ruling, and thus not construed by the Texas district court, Sonos and the defendants agreed to construe "one or more transport controls to control playback" as "one or more user input elements, each enabling control of a respective playback-related function." Ex. 1012 at 4. Additionally, Sonos proposed construing "wireless communication interface" as "physical component of a device that provides a wireless interconnection with a local area network." *Id.* at 3.

Sonos also asserted the plain and ordinary meaning for the following claim terms: "first cloud servers," "second cloud servers of a streaming content service," and "playback queue." *Id.* at 4. For the purposes of this IPR, Google adopts the constructions of the District Court for the Western District of Texas and Sonos's proposed claim constructions for those terms not presented for construction and construed by the district court. *See* Bims, ¶¶38-40.

VII. The Challenged Claims Are Unpatentable

The challenged claims are unpatentable under four grounds based on the Al-Shaykh reference. All grounds establish that each of the challenged claims would have been obvious. *See* Bims, ¶¶68-69.

A. Independent Claims 1, 13, and 25

Al-Shaykh and Qureshey (Ground I) render independent claims 1, 13, and 25 unpatentable. *See* Bims, ¶ 70. Al-Shaykh discloses the base media playback system including a mobile control device with a GUI that enables a user to transfer playback to a rendering device and functionality to allow the rendering device to retrieve content for playback from a remote source. Qureshey discloses media playback systems with servers that provide different functionality including a first set of at least one server that adds information to the playback device that identifies the location of multimedia content to be played back and a second set of at least one server that is associated with a content service and stores the content to be played back. Lastly, to the extent Patent Owner argues that Ground I does not disclose element [1-g], Al-Shaykh, Qureshey, and Phillips (Ground II) also disclose this element.

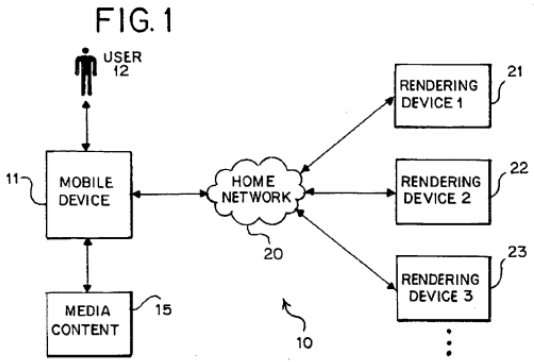
1. Combining Al-Shaykh and Qureshey (Ground I)

A POSA would have been motivated to and would have found it obvious to combine Al-Shaykh and Qureshey for several reasons. Bims, ¶¶71-78.

Al-Shaykh and Qureshey are in the same field of endeavor, deal with similar devices, and are directed to solving the same problems in those devices. Bims, ¶72. For example, Qureshey generally "relates to the field of audio file transfers [to network-enabled audio devices] and, more particularly, relates to the field of management and distribution of audio files over a computer network such as the Internet." Qureshey, 1:16-33, 2:16-33, 24:31-43, 16:29-17:31, 21:40-23:5, Figs. 11, 15, 17B. Qureshey also discusses storing playlists onto a rendering device. *Id.*, Abstract, 17:2-31. Similarly, Al-Shaykh discusses organizing media, playlists, and transferring playback of media content from a mobile phone to a rendering device and media content is streamed from the Internet. Al-Shaykh, Abstract, [0080], [0082], [0011], [00087], [00090], [00092]. Thus, both references enable users to transfer playback to various devices and playback content on those devices from the Internet, which provides much greater accessibility to content than traditional systems that were limited to playback of content locally stored on the network. Qureshey, 1:37-52 ("With streaming audio, a user with a Personal Computer (PC), a sound card, and the necessary software can listen to audio programs from anywhere in the world."); Al-Shaykh, [0090]; Bims, ¶72.

Further, both references describe networked media playback systems that include a control device and one or more rendering devices. *See* Bims, ¶73. Al-Shaykh, Abstract, [0078], Fig. 1 (showing mobile device 11 and rendering devices

21, 22, 23 in home network 20; Qureshey, Fig. 11 (showing PC IPAN client 1106 and networked-enabled audio devices 1108, 1110), 16:29-17:31, 2:65-3:4, 3:57-4:3 (describing that the PC and devices are connected via a local area network). Thus, Al-Shaykh and Qureshey involve similar media playback systems that are often used in homes or offices and allow users the flexibility of playing content on various device configurations for different scenarios. *See* Al-Shaykh, [0005] ("the user may render the music content on a high quality stereo in the home instead of being limited to playback using the mobile device."); Qureshey, 2:16-20 ("The present invention solves these and other problems by providing a network-enabled audio device for listening to a variety of audio sources with substantially equal convenience"). A POSA would also have been motivated to combine these references to develop an improved GUI for control devices in a multimedia playback network. Bims, ¶73.



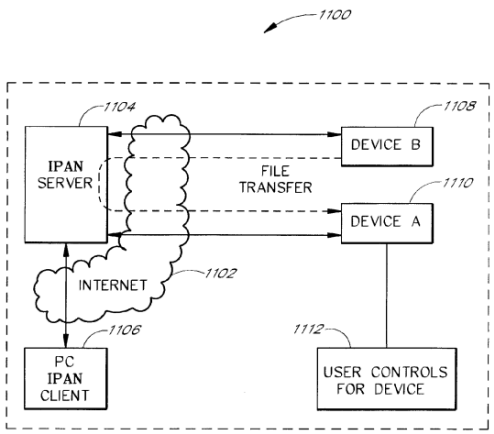


FIG. 11

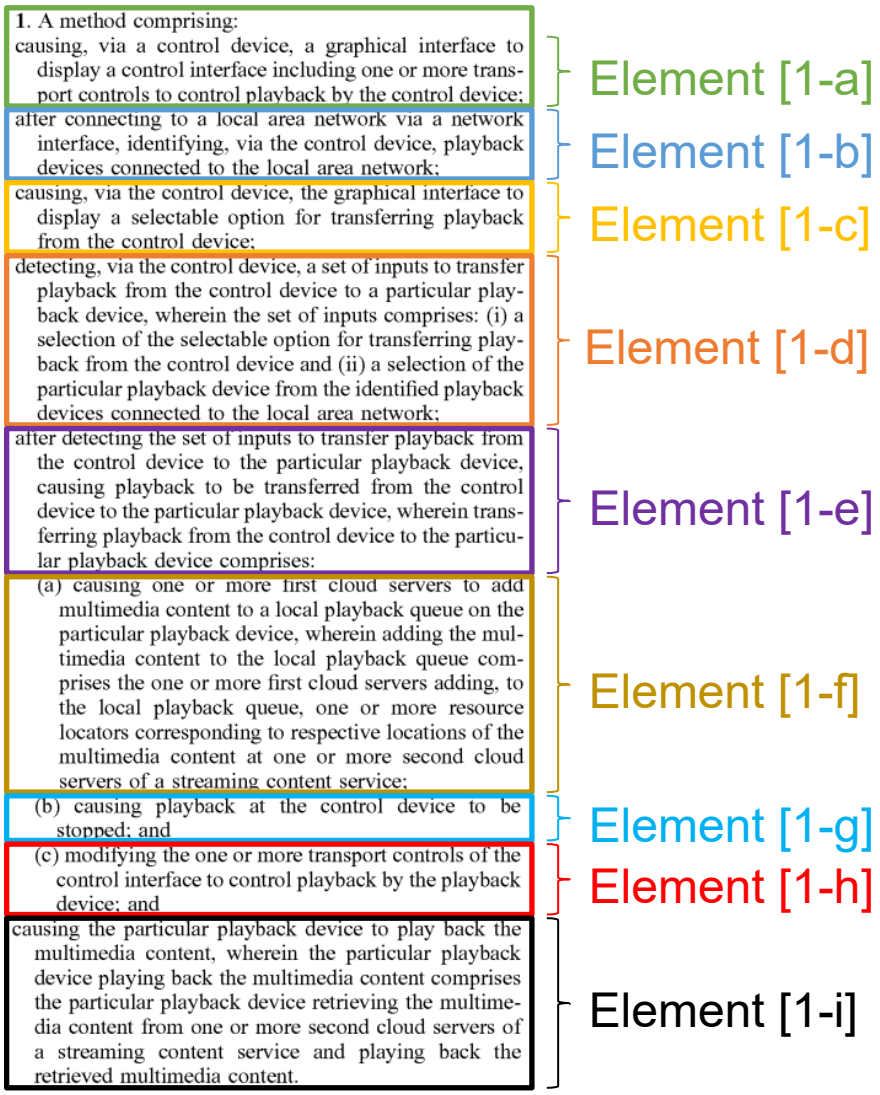
Al-Shaykh, Fig. 1 Qureshey, Fig. 11

Additionally, the references are directed toward solving similar problems. *See* Bims, ¶¶74-77. For example, Al-Shaykh and Qureshey disclose methods to transfer playback of media content from a control device to a playback device such that the user can still control playback and conduct other tasks from the control device. Qureshey, 2:3-13 ("Moreover, even if the user can afford to purchase multiple PC's and install the proper connection, the user would have difficulty playing music in addition to performing other tasks on the PC."), 1:65-2:12, 4:1-3; Al-Shaykh, [0053] (discussing external rendering of content on rendering devices which would allow users to use the mobile control device for other tasks). These media playback systems provide a cheaper option that mixes expensive control devices, such as PCs, with low-cost devices, such as rendering devices. Qureshey, 1:65-2:12, 4:1-3, 1:27-36, 2:58-3:4; Al-Shaykh, [0004].

Based on at least the reasons noted above, Al-Shaykh and Qureshey are analogous art to the '615 patent, and a POSA would have found it obvious to combine them. *In re Clay*, 966 F.2d 656, 659 (Fed. Cir. 1992); Bims, ¶ 78.

2. Al-Shaykh and Qureshey (Ground I) and Al-Shaykh, Qureshey, and Phillips (Ground II) Disclose Every Element of Claim 1

Grounds I and II disclose all elements of claim 1, as defined below:



a. Element [1-a]

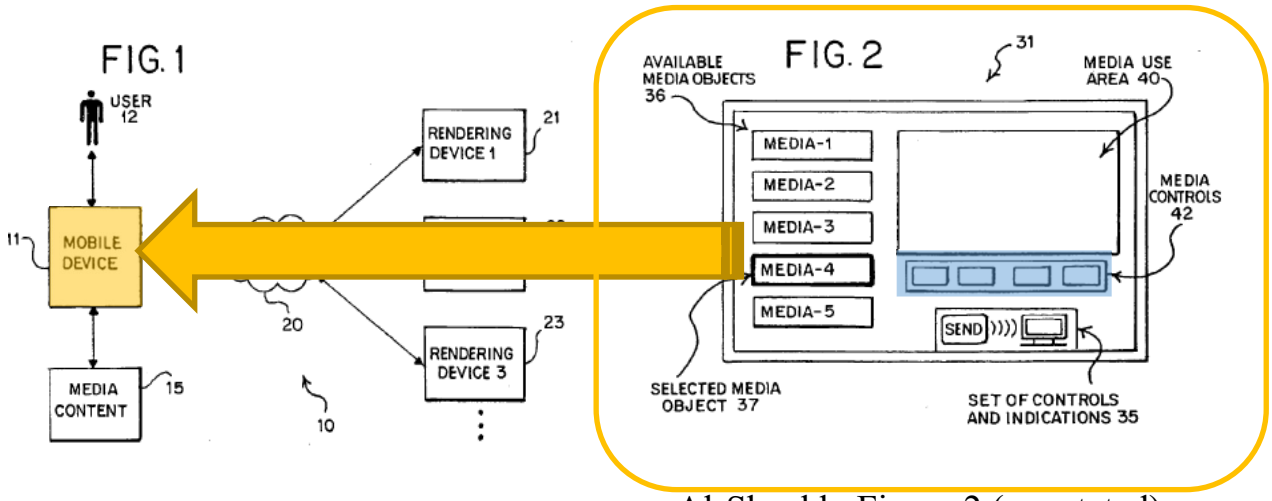
Al-Shaykh discloses *a method comprising:*[1] *causing, via a control device* (e.g., "mobile device")*, a graphical interface to display a control interface* (e.g., "user interface 31" displaying media controls interface) *including one or more transport controls to control playback by the control device* (e.g., "media controls

[1] Claim language in italics throughout

42" to "control rendering of music files on the mobile device 11"), as recited in element [1-a]. Al-Shaykh, [0078], [0085], [0088], [0092], Fig. 2; Bims, ¶¶79-80. Although the term was not presented to the district court for construction and was thus not construed by the district court, Al-Shaykh's media controls 42 also meet the construction agreed-upon of "one or more transport controls to control playback" in the related litigation because the media controls are user input elements that enable control of playback related functions. *See* Ex. 1012 at 3 (construing the term as "one or more user input elements, each enabling control of a respective playback-related function").

Al-Shaykh discloses a "mobile device" with a "user interface 31" that includes various components, including a media controls interface area. Al-Shaykh, [0078] ("The mobile device 11 may have a display screen capable of displaying ***user interface elements*** and/or visual media content.") (emphasis added), [0085-88], [0092], Figs. 1-2, 12. Specifically, the media controls interface area includes "media controls 42," which are elements used to "control rendering of music files on the mobile device 11." *Id*, [0092], [0088] ("The media controls 42 ***may enable the user 12 to control media-related tasks***, such as, for example, creation, discovery, selection, organization, management, manipulation and/or rendering of the media content 15") (emphasis added). Thus, Al-Shaykh discloses this limitation, even under Sonos's interpretation, because it discloses the mobile

device causing a user interface 31 to display a media controls interface area, which includes one or more media controls 42 to control media-related tasks and rendering on the mobile device. *See* Bims, ¶¶79-80.



Al-Shaykh, Figure 1 (annotated)

Al-Shaykh, Figure 2 (annotated)

b. Element [1-b]

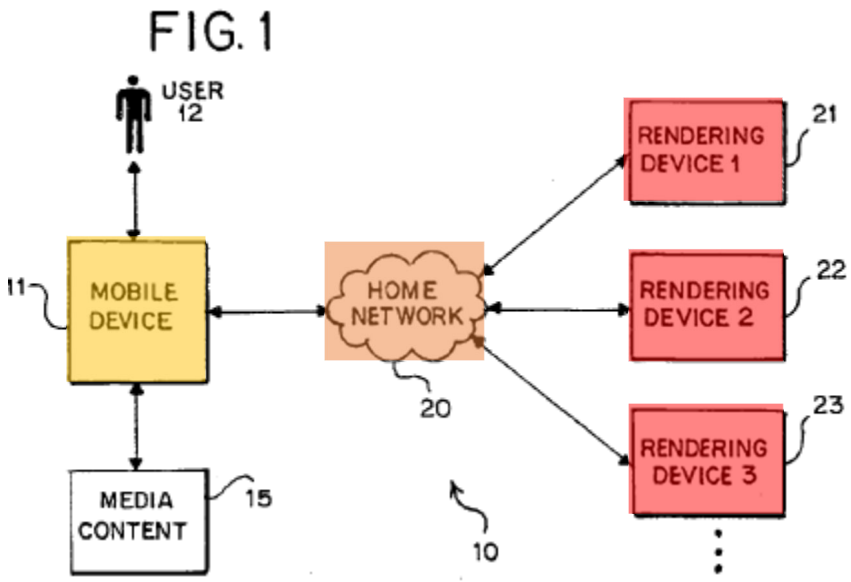
Al-Shaykh discloses a method comprising, *after connecting to a local area network via a network interface* (e.g., "mobile device 11" connecting to a "home network 20"), *identifying, via the control device, playback devices connected to the local area network* (e.g., "mobile device" identifies "additions and/or [] deletions" of rendering devices connected the "home network 20"), as recited in element [1-b]. Al-Shaykh, [0005], [0078], [0080], [0034], [0112], [0153], Fig. 1; Bims, ¶¶81-85.

Al-Shaykh's mobile device connects to a home network 20, such as a "residential local area network," in order to "communicate with one or more

available rendering devices." Al-Shaykh, [0078], Fig. 1. A POSA would have understood that the home network 20 would be a local area network because it is a network that connects devices and enables them to communicate data, including multimedia data, between each other. Bims, ¶82.

A POSA would further have understood that Al-Shaykh's mobile device contains a physical component, such as a wireless transceiver component, that allows it to connect with and communicate over a data network. Bims, ¶¶83-84. This physical component includes transmitters and receivers to facilitate data flow between the mobile device to the rendering devices over the home network. Further, the '615 patent describes a network interface as any component that provides interface functions to communicate over "any of the wireless standards IEEE 802.11a, 802.11b, 802.11g, 802.11n, or 802.15," Ex. 1001, 7:51-60, or "IEEE 802.3," Ex. 1001, 7:63-66, also known as Ethernet, Bims, ¶84. Al-Shaykh discloses communicating using the same local area network protocols for the home network, so the components of Al-Shaykh's mobile devices providing the interface to those networks are network interfaces. Al-Shaykh, [0004-05], [0077-78], [0080] ("The home network 20 may utilize one or more network connection technologies, such as, for example, IEEE 802.11 ('WiFi'), IEEE 802.3 ('Ethernet'), IEEE 1394 ('FireWire') and/or the like"), [0082], [0094].

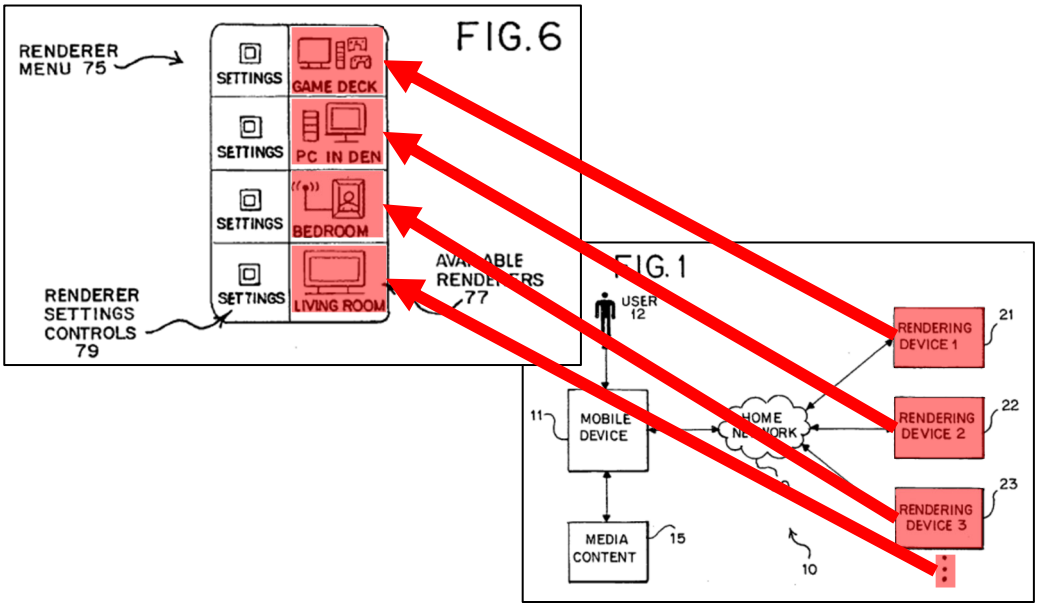
Further, Al-Shaykh's rendering devices include "televisions[s], … stereo[s], … a gaming console[s], a personal computer[s], a laptop PC[s], [] netbook PC[s], and/or the like," and, thus, are playback devices because each of these devices are configured to playback content. Al-Shaykh, [0081], Fig. 1. Additionally, the rendering devices are connected to and able to communicate with other devices on the home network 20. *Id.*, [0078], Fig. 1.



Al-Shaykh, Figure 1 (annotated)

After connecting to the local area network, the mobile device communicates with "rendering devices 21, 22, 23." *Id.* Further, the mobile device continuously "identif[ies]" rendering devices that are "added to and/or [] removed from the home network 20." *Id.*, [0112]; Bims, ¶85. Al-Shaykh refers to the identified renderers on the network as "available renderers," "for example one of more of the

rendering devices 21, 22, 23 . . .," as shown in annotated figure 6 below. *Id.*, [0133].



Al-Shaykh, Figure 6 (annotated with elements from Figure 1)

c. Element [1-c]

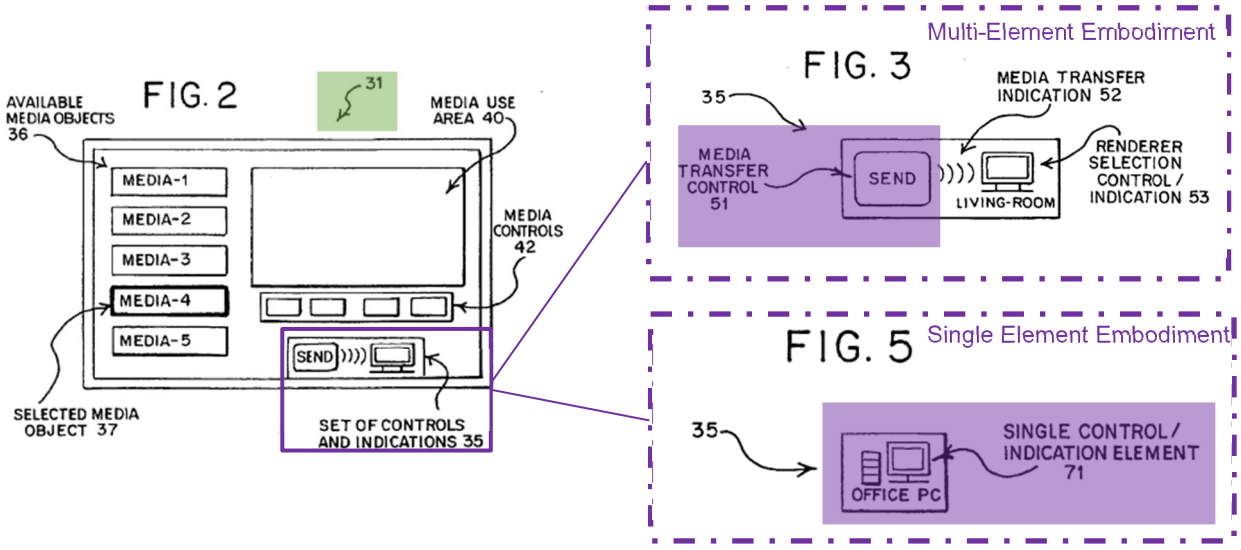
Al-Shaykh discloses *causing, via the control device, the graphical interface* (e.g., "user interface 31") *to display a selectable option for transferring playback from the control device* ("displaying media transfer control 51 or control/indication element 71", as recited in element [1-a]. Al-Shaykh, [0089], Fig. 2; *see* Bims, ¶¶86-88.

The "user interface 31" of Al-Shaykh's mobile device displays a "set of controls and indications 35 [that] enable the user 12 to enable and/or disable

transfer of the media content 15" to a rendering device. Al-Shaykh, [0089], Fig. 2. Al-Shaykh discloses two configurations of the controls and indications 35:

- Figure 3 shows a multi-element embodiment that includes a media transfer control 51 that is "used to enable and/or disable the transfer of the media content 15" to a rendering device (Al-Shaykh, [0100], [0115], Figs. 2-4);
- Figure 5 shows a single element embodiment that includes a control/indication element 71 that can be invoked to "enable and/or disable the transfer of the media content 15" to a rendering device. Al-Shaykh, [0120], Figs. 2, 5.

Thus, Al-Shaykh discloses this limitation because the mobile device displays media transfer control 51 and control/indication element 71 as selectable options for transferring playback from the control device (i.e., the mobile device) to a rendering device. Bims, ¶¶86-88.



Al-Shaykh, Figures 2, 3, and 5 (annotated)

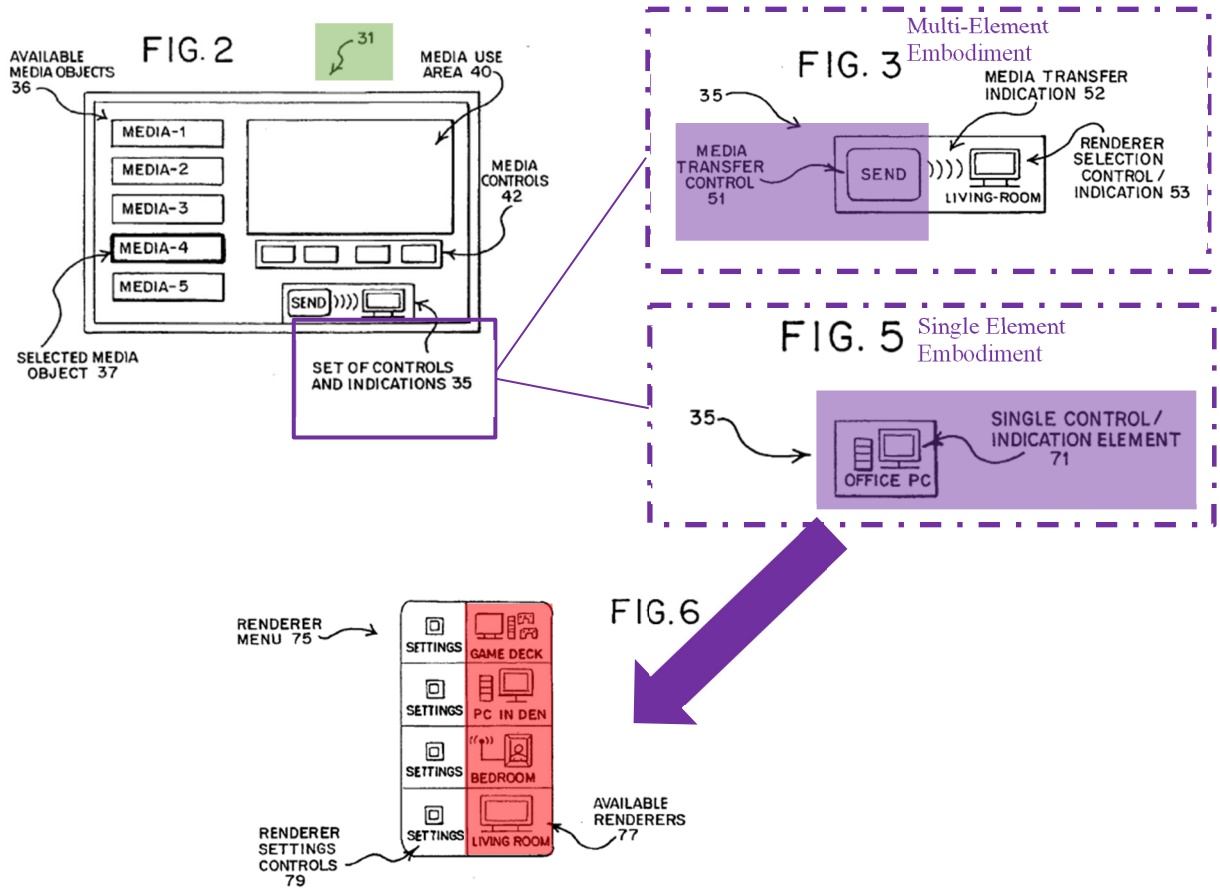
d. Element [1-d]

Al-Shaykh discloses *detecting, via the control device, a set of inputs to transfer playback from the control device to a particular playback device* (e.g., selection of media transfer control 51 or control/indication element 71 on "user interface 31" and selection of rendering device from "list 77 of available rendering devices"), *wherein the set of inputs comprises: (i) a selection of the selectable option for transferring playback from the control device* (e.g., selection of media transfer control 51 or control/indication element 71 on "user interface 31") *and (ii) a selection of the particular playback device from the identified playback devices connected to the local area network* (e.g., selection of rendering device from "list 77 of available rendering devices"), as recited in element [1-d]. Al-Shaykh, [0085],

[0089], [0099-100], [0114-115], [0119-121], [0133-139], [0031], [0036], Figs. 2-6; *see* Bims, ¶¶89-92.

First, as explained in Section VII.A.2.c, Al-Shaykh discloses a *selectable option for transferring playback from the control device*. Further, a user selects the selectable option (i.e., media transfer control 51 or control/indication element 71) to "enable and/or disable transfer of the media content 15" to a rendering device. *See supra* VII.A.2.c; *see* Bims, ¶ 90.

After the media transfer control 51 or control/indication element 71 is selected, the mobile device can display a renderer menu 75 with "a list 77 of available rendering devices" for a user to select from. Al-Shaykh, [0106] ("the user 12 may invoke the renderer selection control/indication 53 to access a list of available rendering devices"), [0117], [0120-121], [0133] ("The renderer menu 75 and/or the list 77 may enable the user 12 to select a new target rendering device from the available rendering devices … The renderer menu 75 may appear, may be accessed and/or may be used … in response to the user 12 invoking the single control/indication element 71"); Bims, ¶ 91. This list includes "a subset of the available rendering devices in the home network 20," which can be a local area network. *Id.*, [0136], [0078]. The list enables a user to "select" a particular rendering device from the list of available rendering devices. *Id.*, [0133].



Thus, Al-Shaykh discloses *detecting, via the control device, a set of inputs to transfer playback from the control device to a particular playback device, wherein the set of inputs comprises* because in Al-Shaykh's system, a mobile device detects user inputs to transfer playback from the mobile device to a particular rendering device when the user selects the media transfer control 51 or control/indication element 71 followed by a second selection of a particular rendering device from the renderer menu. Bims, ¶ 92.

e. Element [1-e]

Al-Shaykh discloses *after detecting the set of inputs to transfer playback from the control device to the particular playback device, causing playback to be transferred from the control device to the particular playback device*, as recited in element [1-e] (e.g., *see supra* Section VII.A.2.d).

As explained in Section VII.A.2.d, Al-Shaykh discloses *detecting the set of inputs to transfer playback from the control device to the particular playback device*. *See* Bims, ¶¶93-94. Al-Shaykh further discloses that, after detecting the set of inputs, the mobile device causes playback to transfer to the target rendering device. Al-Shaykh, [0130] ("For example, the single control/indication element 71 may be displayed in a static form if the transfer of the media content 15 is disabled and/or may be animated to indicate that media content 15 is transferring to the target rendering device."), [0089] ("Further, the set of controls and indications 35 may visually indicate the target rendering device and/or may visually indicate whether the media content 15 is currently being transferred."), [0092] ("As a result, the additional music files may transfer from the music player application to the target rendering device for rendering.").

f. Element [1-f]

Al-Shaykh does not disclose element [1-f], however, but Qureshey does.

Qureshey discloses *causing one or more first cloud servers* (e.g., IPAN Server) *to add multimedia content to a local playback queue on the particular playback device*, *wherein adding the multimedia content to the local playback queue comprises the one or more first cloud servers adding, to the local playback queue* (e.g., when the storage space 1512 of the networked-enabled audio device 1510 contains one or more an initial playlist of URLs)*, one or more resource locators* (e.g., playlist with URLs) *corresponding to respective locations of the multimedia content at one or more second cloud servers of a streaming content service* (e.g., web sites audio sources that provide the audio device content to stream), as recited in element [1-f]. *See* Bims, ¶¶95-104.

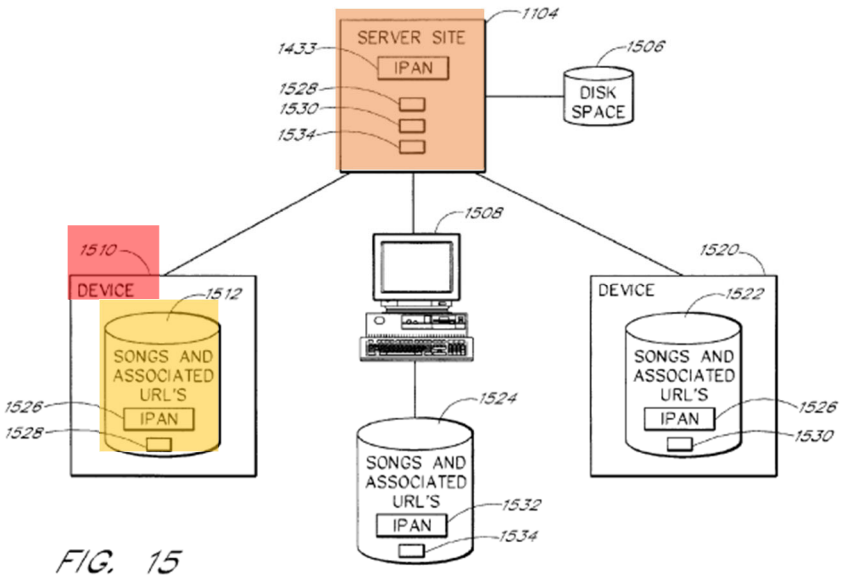


FIG. 15

First, Qureshey's IPAN server 1104 is a *first cloud server* and Qureshey's audio sources 630-632 constitute *second cloud servers of a streaming content*

service. Both the IPAN server 1104 and audio sources 630-632 constitute cloud servers because they are remote computing systems that are accessed over the Internet. *See* Bims, ¶ 97; Ex. 1011 at 27-30 (noting that "cloud" servers "refers to computing systems that are not part of any 'local' network of a user, but rather are remote from a user's 'local' network and are accessed by the user's devices via a wide-area network such as the Internet."); Qureshey, 3:34-39, 16:56-60 ("The PC IPAN client 1106 connects to the IPAN Server 1104 through the network 1102 (such as the Internet)."), 14:32-47 ("The Internet provides the ability to transfer data between any two of the sites 602, 630-632 … the intelligent radio 100 makes a "direct" connection to the selected site."), 16:29-31 ("the intelligent radio … is a network-enabled audio device"), Figs. 11, 15, 6B; *see also* Ex-1010 at 41:25-42:12. Further, audio sources 630-632 are part of a "Web Radio site 602 (e.g., www.webradio.com), which provides a service for streaming "Web radio broadcast stations" and other "streaming audio programming." Qureshey, 13:8-27, 14:32-47.

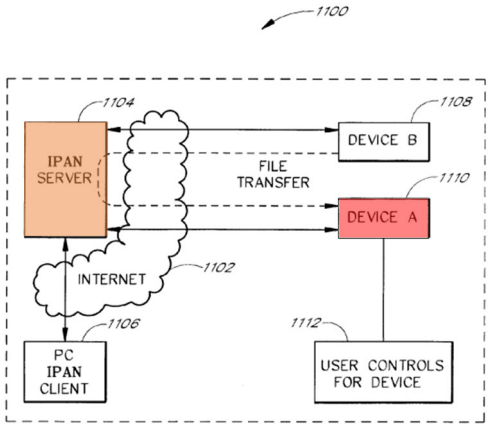


FIG. 11

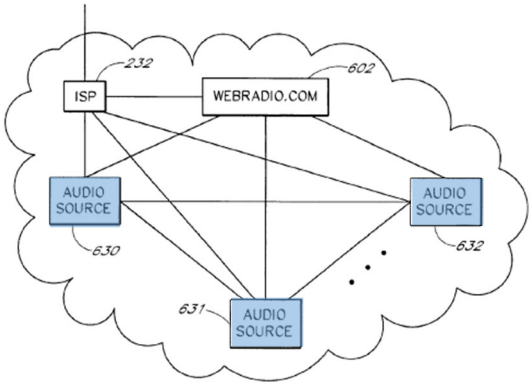


FIG. 6B

Second, Qureshey discloses *causing one or more first cloud servers to add multimedia content to a local playback queue on the particular playback device, wherein adding the multimedia content to the local playback queue comprises the one or more first cloud servers adding, to the local playback queue, one or more resource locators corresponding to respective locations of the multimedia content*. *See* Bims, ¶ 98. Qureshey discloses a synchronization procedure that causes an IPAN cloud server to add an updated playlist to the storage space 1512 of a network-enabled audio device, wherein the updated playlist includes a list of audio files[2] and Uniform Resource Locators (URLs) corresponding to the location of the

[2] For the purposes of this petition, Petitioner adopts Sonos' construction of "multimedia" asserted in the parallel district court litigation. Specifically, Sonos asserted that the plain and ordinary meaning of "multimedia" includes audio only

audio files in the playlist. Qureshey, 24:26-30 ("the user presses the synchronize button 1718 so that the next time the device 1200 or 1300 connects, an updated playlist will be downloaded"), 21:62-65 ("Each network enabled audio device 1510 has storage space 1512 for a playlist 1528, which is a list of audio files and associated URL's of where the audio files were retrieved from"), 22:48-58 ("Within the playlist, the URL's indicate the location from which the audio files associated with the song titles in the playlist can be downloaded"), 3:46-47, 14:32-47, 7:55-58, Claim 43, Figs. 11, 15, 6B.

Third, the network-enabled audio device contains a local playback queue that contains a playlist with URLs and a certain list of media (e.g., list of songs for playback) stored within the storage space 1512. The stored URLs are used for retrieval and playback of the certain list of songs in a particular sequence. *See* Qureshey, 21:62-67 ("Each network enabled audio device 1510 has storage space 1512 for a playlist 1528, which is a list of audio files and associated URL's."),

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content. As described in this section and Section VII.A.2.a, Al-Shaykh and Qureshey disclose playback of audio files, which would constitute "multimedia" under Sonos' constructions. Even if "multimedia" required content constituting more than one type of media (e.g., audio and video), Al-Shaykh discloses playback of such type of content. Al-Shaykh, ¶¶ [0003-04], [0084], [0160-167].

21:43-46 ("Each network-enabled audio device 1510 has a storage space 1512 for network-enabled audio device IPAN software 1526, a playlist 1528, and associated URL's and songs within the playlist."); Bims, ¶¶99-100; *see also* Ex-1010 at 144:24-145:16 (Sonos' expert explaining that a queue holds "media items such as a URL to a song"). The audio device uses the stored list of URLs to obtain a plurality of songs from a remote source and plays the songs in the particular sequence. *Id.*, 28:11-43 ("the first device 1510 will download the songs from the URLs provided to it by server site IPAN 1433"); 35:33-67 (noting that, after obtaining the songs from the remote source, the device "play[s] the audio content [as] indicated by the playlist."). Thus, a POSA would understand that the storage space 1512 containing a playlist with URLs and a certain list of songs includes a local playback queue with URLs used for both retrieving songs and playing them back in a particular sequence, and the list of songs included in the playlist indicates the particular sequence of playback itself. Bims, ¶¶99-100 (noting that storing URLs used to both play back songs in a sequence and retrieve those songs, as disclosed by Qureshey, indicates that the storage space 1512, when storing these URLs, it includes an actual queue that facilitates and effectuates playback in a particular sequence). Further, the playlist can store the songs themselves, additionally indicating that Quershy discloses adding multimedia content to a local playback queue. *Id.*

Fourth, a POSA would have modified Al-Shaykh's system to include features from Qureshey's system. *See* Bims, ¶ 101. Specifically, Al-Shaykh's rendering devices would incorporate Qureshey's storage space 1512 within a networked-enabled device and Al-Shaykh's system would incorporate Qureshey's first cloud server (i.e., the IPAN server).[3] Thus, in the combined Al-Shaykh-Qureshey system, when a set of inputs to transfer playback from the mobile device to the particular rendering device is detected, as disclosed in Al-Shaykh, then the system would cause a first cloud server (i.e., Qureshey's IPAN server) to add URLs associated with the locations of the audio files to the storage space 1512 (as disclosed in Qureshey) in Al-Shaykh's rendering devices.

Fifth, a POSA would have been motivated to combine Al-Shaykh and Qureshey for reasons stated in Section VII.A.1. *See* Bims, ¶¶102-03. Additionally, a POSA would have been motivated to incorporate the back-end server functionality that enables a rendering device to directly retrieve content from the

[3] Both Al-Shaykh and Qureshey disclose "one or more second cloud servers of a streaming content service" and, thus, Qureshey's second cloud server (i.e., audio sources 630-632) do not need to be incorporated into the Al-Shaykh-Qureshey combination. However, this similarity is another reason that a POSA would modify Al-Shaykh with Qureshey.

Internet to play back, as taught by Qureshey, into Al-Shaykh's system, to the extent that Al-Shaykh does not disclose this functionality. Qureshey, 3:34-39, 16:56-60, 14:32-47, 16:29-32, 13:8-27, Figs. 11, 15, 6B; *see* Al-Shaykh, [0094], [0097], [0015]; *infra* Section VII.A.2.i.i. Al-Shaykh's rendering devices can directly retrieve media content from a remote server for playback but Al-Shaykh does not explain the details on the back-end functionality that facilitates this transaction. *See infra* Section VII.A.2.i.i. A POSA would have looked to similar references in the art for further disclosures of networked playback systems to determine how playback devices within the systems are able to directly retrieve content from remote sources, and, thus, a POSA would have found it obvious to combine Al-Shaykh and Qureshey in this way. Bims, ¶¶102-03.

Moreover, a POSA would have been motivated to implement Qureshey's back-end server functionality to improve the system by preventing any disconnection or failure of a mobile control device to impact ongoing playback on the rendering device. Bims, ¶ 103. That is, the added functionality enables storage of URLs on the rendering device such that the rendering device can retrieve the content to be played back without assistance from the mobile control device. *Id.* Such a combination would improve the user experience by minimizing playback stoppages at the rendering device. *Id.*

g. Element [1-g]

i. Al-Shaykh and Qureshey (Ground I)

Al-Shaykh discloses *transferring playback from the control device to the particular playback device further comprises (b) causing playback at the control device to be stopped* (e.g., enabling transfer of media content to rendering device stops playback at the mobile device), as recited in element [1-g]. Al-Shaykh, [0100], [0053], [0093], [0156-57], [0166-67], [0173-74]; *see* Bims, ¶¶104-06.

As explained in Section VII.A.2.e, Al-Shaykh discloses *transferring playback from the control device to the particular playback device*. Further, transferring playback "enable[s] a user to use the mobile device to start and stop external rendering of the media content currently selected in a media application executed by the mobile device." *Id.*, [0053]. Specifically, invoking media transfer control 51 or control/indication element 71 (as explained in Section VII.A.2.c) enables or disables the transfer of media content to the rendering device. *Id.*, [0100]. Al-Shaykh explicitly notes that disabling causes "the target rendering device [to] stop rendering the media content 15." *Id.* A POSA would understand that enabling the transfer of media content to the rendering device would cause the mobile to stop playback. Bims, ¶ 105.

Additionally, Al-Shaykh discloses the functionality required to stop playback at the mobile device when playback is transferred to the particular

rendering device. Specifically, Al-Shaykh discloses transferring playback from an initial rendering device to a new rendering device. Al-Shaykh, [0156-57], [0166-67], [0173-74]. When transfer occurs, "rendering of the music content on the initial target rendering device may be stopped, and … the rendering of music content on the new target rendering device may begin." Similarly, when rendering from the mobile device is transferred to the target rendering device, the rendering at the mobile device is stopped. *See id.*, [0174], [0157] (the user may transfer playback back from the rendering device to the mobile device by invoking the media transfer control 51 or control/indication element 71 a second time). Thus, a POSA would find Al-Shaykh renders obvious that a mobile device stops playback when playback is transferred to the particular rendering device. Bims, ¶ 106.

ii. Al-Shaykh, Qureshey, and Phillips (Ground II)

(a) Phillips

Similar to Al-Shaykh, Phillips also discloses a networked playback system that enables "transferring video display between video playback devices" such as from a "mobile device" to a "desired renderer." Phillips, Abstract, Fig. 1; *see* Bims, ¶¶107-111. A user utilizes the mobile device's GUI to playback content on the device or initiate the playback transfer to a desired rendering device. *Id.*, 3:40-60, Fig. 3. Once transfer is accomplished, playback at the mobile device is "terminated" and the renderer is able to request and retrieve content for playback

from remote sources, such as "Internet-based streaming video services (e.g., Hulu, Netflix, CBS.com, or the like)." *Id.*, 3:18-61, 7:28:42, 11:19-33.

(b) Phillips also discloses Element [1-g]

To the extent Patent Owner disagrees that Al-Shaykh and Qureshey (Ground I) teaches this limitation, Phillips also discloses this limitation. *See* Bims, ¶¶112-120.

Phillips discloses *causing playback at the control device to be stopped*, as recited in element [1-f]. Specifically, Phillips discloses transferring content from a "mobile device 20" to a "desired renderer 14" and, "once transfer is complete, display of the video content at the mobile device 20 is terminated." *Id.*, 10:48-61; 7:28:42; Bims, ¶ 113.

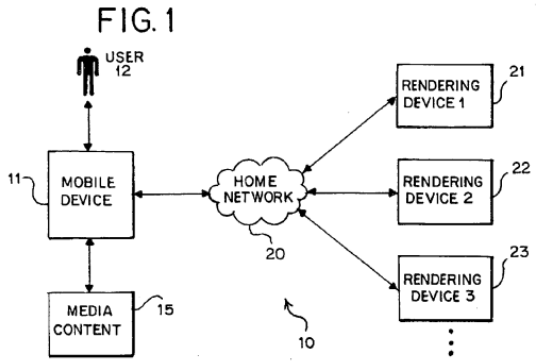
Further, as discussed above in Section VII.A.2.e, Al-Shaykh discloses transferring playback to a particular rendering device. The teachings of Phillips can be implemented to Al-Shaykh's system when transfer of playback to a particular rendering device is complete. Specifically, when Al-Shaykh's system completes the transfer of playback to a particular rendering device, it would terminate the display of content at the mobile device, as Phillips teaches. Bims, ¶ 114.

A POSA would have been motivated to and would have found it obvious to add Phillips's functionality to Al-Shaykh's system for several reasons. Bims, ¶ 115.

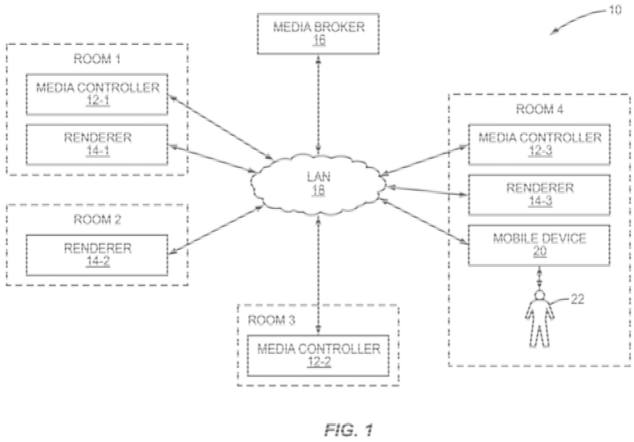
Al-Shaykh and Phillips are in the same field of endeavor, deal with similar devices, and are directed to solving the same problems in those devices. Bims, ¶ 116. For example, Phillips generally "relates to transferring display of video content from one device to another" and playback content from the Internet. Phillips, 1:14-15. Similarly, Al-Shaykh discusses "transfer[ing] media content from a mobile device to [rendering devices within] a home network" where the media content is streamed from the internet. Al-Shaykh, Abstract, [0006], [0082]. Thus, both references enable users to transfer playback to various devices and playback content on those devices from the Internet, which provides much greater accessibility to content than traditional systems that were limited to playback of content locally stored on the network. *See* Phillips, 3:18-42; Al-Shaykh, [0090].

Further, both references describe networked media playback systems that include a control device and one or more rendering devices. Al-Shaykh, Abstract, [0078], Fig. 1 (showing mobile device 11 and rendering devices 21, 22, 23 in home network 20; Phillips, Fig. 11 (showing renderers 14 and mobile device 20 in a LAN 18); Bims, ¶ 117. Thus, Al-Shaykh and Phillips involve similar media playback systems that are often used in homes or offices and allow users the flexibility of playing content on various device configurations for different scenarios. *See* Al-Shaykh, [0005] ("the user may render the music content on a

high quality stereo in the home instead of being limited to playback using the mobile device."); Phillips, 1:19-34.



Al-Shaykh, Fig. 1



Phillips, Fig. 1

Additionally, the references are directed toward solving similar problems. Bims, ¶ 118. For example, Al-Shaykh and Phillips disclose methods to seamlessly transfer playback of media content from a control device to a playback device without delay and in a manner that the user can still control playback and conduct other tasks from the control device. Phillips, 1:19-34; Al-Shaykh, [0053]. These media playback systems provide a more affordable option that mixes expensive control devices with low-cost rendering devices and improves the user's video watching experience at home by providing the flexibility of seamlessly using the rendering devices. Phillips, 1:19-34; Al-Shaykh, [0004].

Additionally, a POSA would have been motivated to incorporate terminating playback at the mobile device when playback is transferred to rendering device, as

taught by Phillips, into Al-Shaykh's system, to the extent that Al-Shaykh does not disclose this functionality. Phillips, 7:28:42; *see* Al-Shaykh, [0094], [0097], [0015]; *see* Bims, ¶ 119. Al-Shaykh's system transfers playback to a rendering device and allows the mobile device to control this "external rendering." *See* Section VII.A.2.g. While a POSA would understand this to require playback at the mobile device to stop, to the extent Patent Owner argues otherwise, then a POSA would at least have looked to similar references in the art for further disclosures of networked playback systems to determine what occurs at the mobile device when playback is transferred to a rendering device. And, thus, a POSA would have found it obvious to combine Al-Shaykh and Phillips in this way. Bims, ¶¶119-20. Moreover, a POSA would have been motived to implement this functionality, as described in Phillips, because it improves the system by allowing users to perform other tasks on their mobile phone while playback continues on the rendering device. *Id.*

Based on at least the reasons noted above, Al-Shaykh and Phillips are analogous art to the '615 patent, and a POSA would have found it obvious to combine them. *In re Clay*, 966 F.2d at 659.

h. Element [1-h]

Al-Shaykh discloses *transferring playback from the control device to the particular playback device further comprises (c) modifying the one or more*

transport controls of the control interface to control playback by the playback device, as recited in element [1-h]. *See* Bims, ¶¶121-123.

As explained in Section VII.A.2.e, Al-Shaykh discloses *transferring playback from the control device to the particular playback device*.

Al-Shaykh further discloses that the same media controls 42 that are configured to control playback of the mobile device are configured to control playback of the rendering device. Al-Shaykh, [0092], [0172], [0013], [0162]; *see* Section VII.A.2.a. A POSA would understand that the media controls on user interface 31 must be modified in order for the same media controls to be configured to control playback in both modes (i.e., a first mode where playback is at the mobile device and a second mode where playback is transferred to the rendering device). Bims, ¶ 123. Specifically, when playback is transferred from the mobile device to the rendering device, the media controls must be modified in order to change the command operation such that use of one of the media control controls the operation of the rendering device and not the mobile phone. *Id.* Sonos's infringement contentions mapped this limitation in an identical manner. Ex. 1013 at 26-27.

i. Element [1-i]

Al-Shaykh discloses this limitation. To the extent Patent Owner disagrees, both Qureshey also discloses this limitation. *See* Bims, ¶¶124-131.

i. Al-Shaykh

Al-Shaykh discloses *causing the particular playback device to play back the multimedia content, wherein the particular playback device playing back the multimedia content comprises the particular playback device retrieving the multimedia content from one or more second cloud servers of a streaming content service and playing back the retrieved multimedia content*, as recited in element [1-i].

First, Al-Shaykh discloses *causing the particular playback device to play back the multimedia content*, as recited in element [1-i]. *See* Bims, ¶ 127. Specifically, Al-Shaykh discloses "rendering [] media content on the target rendering device." Al-Shaykh, [0097], [0015] ("indicating to the user of the mobile device that the first target rendering device is rendering the first media content wherein the media transfer indication indicates to the user of the mobile device that the first target rendering device is rendering the first media content.").

Second, Al-Shaykh discloses *wherein the particular playback device playing back the multimedia content comprises the particular playback device retrieving the multimedia content from one or more second cloud servers of a streaming content service and playing back the retrieved multimedia content*, as recited in element [1-i]. *See* Bims, ¶¶126-128.

For example, Al-Shaykh discloses a "remote content service" that provides devices access to stream media content from the internet using, for example, a "service-specific" or "media" application. Al-Shaykh, [0006], [0082], [0090]. Al-Shaykh further discloses a "remote content provider" that directly transmits the media content to the devices. *Id.*, [0020]. Thus, Al-Shaykh's remote content provider transmitting content accessible from a remote content service would constitute a second cloud server of a streaming content service because Al-Shayk's system comprises a remote computing system that is accessed over the Internet. *See* Ex. 1011 at 27-30 (noting that "cloud" servers "refers to computing systems that are not part of any 'local' network of a user, but rather are remote from a user's 'local' network and are accessed by the user's devices via a wide-area network such as the Internet"); Al-Shaykh, [0090] (explaining that the remote content service may be an "internet radio player"), [0093] (discussing playback of "internet media content" on the rendering devices), [0080] (noting that the home network to which the rendering device are connected to "provide[s] a connection to other networks, such as, for example, the internet"), [0006] (discussing streaming media content form the internet using a media content service and associated service-specific application), [0092] (discussing a media application providing content to a target rendering device), [0095] ("the mobile device 11 may access and/or obtain the media content from a remote content service using a 3G carrier

network for use in a media application on the mobile device 11"), Fig. 1; Bims, ¶ 127.

Further, Al-Shaykh further discloses that the particular rendering device can directly retrieve media content to playback without the media content originating from or flowing through the mobile device 11. *Id.*, [0094]; Bims, ¶ 129. Specifically, the media content to be rendered can be stored remotely and "flow" directly to the target rendering device. *Id*, [0095] (explaining that media content can be obtained from a "remote content service"), [0094] ("the media content … may not flow through the mobile device 11 if the transfer of the media content to a target rendering device is enabled using the set of controls and indications 35.").

ii. Qureshey

Qureshey also discloses element [1-i]. *See* Bims, ¶¶129-131. Specifically, Qureshey discloses a networked-enabled audio device (also referred to as an electronic device) that retrieves audio content from a remote source and plays it back. Qureshey, 35:33-36:3 ("where when in a playlist mode of operation, the control system [of the electronic device] is further adapted to: ***receive the playlist assigned to the electronic device from the central system***, the ***playlist identifying a plurality of songs***, wherein ones of the plurality of songs are not stored on the electronic device; ***receive information from the central system enabling the electronic device to obtain the ones of the plurality of songs from at least one***

remote source; obtain the ones of the plurality of songs from the at least one remote source; and ***play the audio content indicated by the playlist***.") (emphasis added), Fig. 6B (showing remote audio sources 630, 631, and 632), 14:32-47, 2:40-46, 4:62-64.

For example, the networked-enabled audio device stores a playlist that includes URLs that indicate the location of audio files. *Id.*, 22:48-58 ("Within the playlist, the URL's indicate the location from which the audio files associated with the song titles in the playlist can be downloaded"), 24:17-30, 21:62-65 ("Each network enabled audio device 1510 has storage space 1512 for a playlist 1528, which is a list of audio files and associated URL's of where the audio files were retrieved from"). As explained in Section VII.A.2.f, the remote source that audio files can be retrieved from are audio sources 630-632 that constitute second cloud servers of a streaming content service.

Thus, a POSA would have been motivated to combine Al-Shaykh and Qureshey for reasons stated in Sections VII.A.1 and VII.A.2.f. *See* Bims, ¶¶129-131.

3. Claims 13 and 25

Independent claims 13 and 25 are substantially similar to claim 1, except that claim 13 recites a "non-transitory computer-readable storage medium" and

claim 25 is directed to a control device. *See* Bims, ¶¶132-136. The following chart shows the differences between the independent claims in red.

Claim 1	Claim 13	Claim 25
[1-a] A method comprising: causing, via a control device, a graphical interface to display a control interface including one or more transport controls to control playback by the control device; **Section VII.A.3.a**	[13-a] A tangible, non-transitory computer readable storage medium including instructions for execution by a processor, the instructions, when executed, cause a control device to implement a method comprising: causing a graphical interface to display a control interface including one or more transport controls to control playback by the control device;	[25-a] A control device comprising: a graphical interface; a wireless communication interface to communicate with a playback device; one or more processors; tangible non-transitory computer-readable media having instructions encoded therein, wherein the instructions, when executed by the one or more processors, cause the control device to perform functions

		comprising: causing the graphical interface to display a control interface including one or more transport controls to control playback by the control device;
[1-b] after connecting to a local area network via a network interface, identifying, via the control device, playback devices connected to the local area network; **Section VII.A.3.b**	[13-b] identical	[25-b] after connecting to a local area network via the wireless communication interface, identifying playback devices connected to the local area network;

The remaining elements are substantially similar such that the relevant analysis for independent claim 1 is applicable for each of the remaining elements

of claims 13 and 25. *Compare* '615 Pat., 17:36-18:12 *with id.*, 19:48-20:27, 22:5-58; *see supra* Sections VII.A.2.c-i and VII.A.3.

As the chart above shows, there are three differences between the claims: (1) the use of "a wireless communication interface" instead of a "network interface" in elements [25-a] and [25-b], (2) the addition of "one or more processors" in element [25-a], and (3) "tangible non-transitory computer-readable media …" in elements [13-a] and [25-a]. *See* Bims, ¶¶133-134.

For the first difference, although not presented for construction and thus not construed by the district court, Sonos construed the term "wireless communication interface" to mean a "physical component of a device that provides a wireless interconnection with a local area network." Ex. 1012 at 3. As explained in Section VII.A.2.b (element [1-b]), a POSA would have understood Al-Shaykh's mobile device would contain a physical component, such as a wireless transceiver component, that would allow the mobile device to communicate on the home network, which can be a "residential local area network." *See* Section VII.A.2.b; Al-Shaykh, [0078]. Thus, Al-Shaykh discloses "a wireless communication interface," under Sonos's interpretation of the term. Bims, ¶ 135.

Further, a POSA would have found that Al-Shaykh's mobile device would include "one or more processors" to perform all of the functions described in Al-Shaykh and Section VII.A.3, including functions such as connecting to and

controlling rendering devices and supporting the GUI module and related user interactions. Bims, ¶ 136; *see* Al-Shaykh, [0078]. Similarly, a POSA would have understood that the mobile device would be equipped with software that instructs the processor to perform these same functions. *Id.* Thus, Al-Shaykh's mobile device would read on both the first and second differences.

B. Dependent Claims 6-12, 18-24, 27-29

Grounds I-II also disclose dependent claims 6-12, 18-24, and 27-29. *See* Bims, ¶¶137-156.

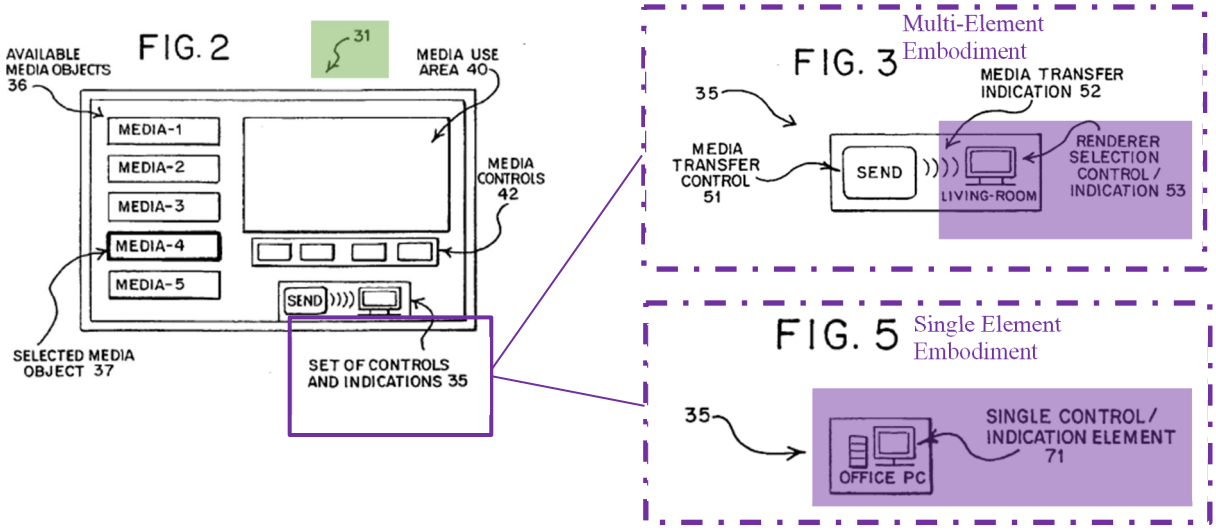
1. Claim 6

a. [6-a]

Al-Shaykh (Grounds I-IV) renders obvious *detecting, via the control device, a set of inputs to transfer playback from the playback device back to the control device* (e.g., selection of media transfer control 51 or control/indication element 71 on "user interface 31" to disable the transfer of the music content to the target rendering device), as recited in element [6-a]. Al-Shaykh, [0085], [0089], [0099-100], [0114-115], [0119-121], [0031], [0036], Figs. 2-5; Bims, ¶¶138-140.

After playback is transferred to the rendering device, a user can again invoke media transfer control 51 or control/indication element 71 on "user interface 31" to disable the transfer to the playback device and effectively transfer playback back to the mobile device. *Id.* Thus, Al-Shaykh discloses *detecting, via the control device,*

[an input] to transfer playback from the playback device back to the control device. *See* Bims, ¶ 139.



It would be obvious for a POSA to improve Al-Shaykh's system to implement a feature such that, after a user invokes invoke media transfer control 51 or control/indication element 71 to disable transfer of playback to the rendering device, then a user would have to provide a second input to confirm the disabling. Bims, ¶ 140. For example, after the initial invocation of the media transfer control 51 or control/indication element 71, the mobile device may present a message asking the user to confirm that it wants to disable the playback transfer. *Id.* It would be obvious for a POSA to modify Al-Shaykh's system in this manner because it would improve the user's experience by preventing disabling when the media transfer control 51 or control/indication element 71 was accidentally selected. *Id.* Further, Al-Shaykh already discloses two-input functionality that can

be easily utilized to implement a two-input disabling feature, as described above. *See* Al-Shaykh, [0121] ("By pressing and holding the touchable button for a period of time, the user 12 may access controls for selecting a new target rendering device from the available rendering devices.").

b. [6-b]

Al-Shaykh (Grounds I-IV) discloses detecting a set of inputs, *wherein transferring playback from the playback device back to the control device comprises: causing playback at the playback device to be stopped; and modifying the one or more transport controls of the control interface to control playback by the control device*, as recited in element [6-b]. *See* Bims, ¶¶141-143.

Specifically, Al-Shaykh discloses that, when "the user 12 [] invoke[s] the media transfer control 51 [or control/indication element 71] in the user interface 200 to disable the transfer of the media content 15 to the target rendering device … the target rendering device may stop rendering the media content 15." Al-Shaykh, [0157], [0166-67], [0173-74].

Further, the media controls 42 that controlled playback at the rendering device when playback was transferred to the rendering device also control playback when playback is at the mobile device. *See* Section VII.A.2.h. For the same reasons as explained in Section VII.A.2.h, a POSA would understand that the media controls 42 must again be modified in order for the same media controls that

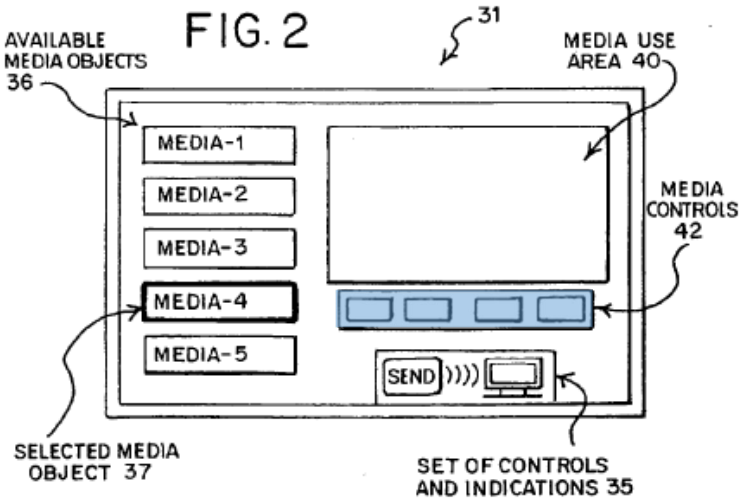
control playback at the rendering device when transfer was enabled to also control playback at the mobile device when transfer is disabled. *See* Bims, ¶¶142-143.

2. Claim 7

a. [7-a]

Al-Shaykh (Grounds I-IV) discloses detecting a method, *wherein causing the graphical interface to display the control interface including one or more transport controls to control playback by the control device* (e.g., *see* Section VII.A.3.a) *comprises causing the graphical interface to display a control interface that includes the one or more transport controls in a particular arrangement on the graphical interface* (e.g., media controls 42 arranged as shown in Figure 2), as recited in element [7-a]. Al-Shaykh, [0092], Fig. 2. *See* Bims, ¶¶144-145.

Al-Shaykh discloses *causing the graphical interface to display the control interface including one or more transport controls to control playback by the control device*, as explained in Section VII.A.3.a. Further, the media controls 42 (i.e., the claimed transport claims) are placed as a module underneath the media use area 40 as shown in Figure 2 and, thus, the media controls 42 are in a particular arrangement.



b. [7-b]

Al-Shaykh (Grounds I-IV) discloses detecting a method, *wherein modifying the one or more transport controls of the control interface to control playback by the particular playback device* (e.g., *see* Section VII.A.2.h) *comprises causing the graphical interface to display the one or more transport controls to control playback by the particular playback device in the particular arrangement* (e.g., media controls 42 control playback of the rendering device), as recited in element [7-b]. *See* Bims, ¶¶146-147.

As explained in Section VII.A.2.h, Al-Shaykh discloses *modifying the one or more transport controls of the control interface to control playback by the particular playback device* and that the same media controls 42 used to control playback of the mobile device are also used to control playback at the rendering device when playback is transferred to the rendering device. Regardless of what

type of playback control is active, the media controls 42 are in the same particular arrangement, as shown by Figure 2. *See supra* Section VII.B.2.a.

3. Claim 8

a. [8-a]

Al-Shaykh and Qureshey (Grounds I and III) disclose detecting a method, *wherein causing the one or more first cloud servers to add multimedia content to the local playback queue comprises causing an identifier of the multimedia content to be added to the local playback queue, wherein the identifier indicates a particular source of the multimedia content at the one or more second cloud servers of the streaming content service*, as recited in element [8-a]. *See* Bims, ¶ 148. Specifically, Qureshey discloses *causing the one or more first cloud servers to add multimedia content to the local playback queue* and *multimedia content at the one or more second cloud servers of the streaming content service*, as explained in Section VII.A.3.f. *See* Bims, ¶ 148. Qureshey's playlist includes URLs and an identifier that indicates the audio source for the content to be played back. Qureshey, 10:64-11:2, 14:32-47, Figs. 3A, 6B.

b. [8-b]

Al-Shaykh and Qureshey (Grounds I and III) disclose detecting a method, *wherein the particular playback device receives the multimedia content from the particular source at the one or more second cloud servers of the streaming content*

service, as recited in element [8-b]. Specifically, Qureshey discloses this limitation, as explained in Sections VII.A.3.i and VII.B.3.a. *See* Bims, ¶ 149.

4. Claim 9

Al-Shaykh and Qureshey (Grounds I and II) disclose detecting a method, *wherein causing one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device comprises sending a message to the streaming content service that causes the one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device*, as recited in claim 9. *See* Bims, ¶¶150-151.

Al-Shaykh discloses *sending a message to the streaming content service*. As explained in Section VII.A.3.d, a user provides a set of inputs to transfer playback to the rendering devices. These user inputs are provided on a "service-specific application on the mobile device," which is associated with the "remote [media] content service" disclosed in Al-Shaykh. Al-Shaykh, [0006], [0090], [0095]. Thus, the user inputs result in sending a message to the remote content service that is associated with the service-specific application. Bims, ¶ 151. As explained in Section VII.A.3.f, the inputs cause the *one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device* in the Al-Shaykh-Qureshey combined system. *See also supra* Sections VII.A.1.

5. Claim 10

Al-Shaykh (Grounds I-IV) discloses detecting a method, *wherein detecting the set of inputs comprises detecting a selection of the multimedia content*, as recited in claim 10. Al-Shaykh discloses a user interface that allows for a user to provide a set of inputs, as explained in Section VII.A.3.d. *See* Bims, ¶152. Further, Al-Shaykh discloses a user interface 31 that includes available media content that a user can select. Al-Shaykh, [0086] ("the user interface 31 of the media application may display a selected symbolic representation 37 for one or more selected media objects."), Fig. 2 (element 36 and element 37). A POSA would have understood that a user would select content to play before or after selecting a selectable option to transfer playback and selecting a particular playback device. Bims, ¶152. Thus, Al-Shaykh discloses a set of user inputs that includes a selection of media content.

6. Claim 11

Al-Shaykh (Grounds I-IV) discloses detecting a method, *wherein detecting the set of inputs comprises detecting an input that causes playback at the control device to be stopped*, as recited in claim 11. *See* Bims, ¶153. Al-Shaykh discloses a user interface that allows for a user to provide a set of inputs, as explained in Section VII.A.3.d. Further, Al-Shaykh discloses media controls 42 that include a "pause" control to stop playback of content. Al-Shaykh, [0092]. These media controls control playback of content at the mobile device, as explained in Section VII.A.3.a. A POSA would understand that a user may pause content before or after

selecting a selectable option to transfer playback and selecting a particular playback device. Bims, ¶153. Thus, Al-Shaykh discloses a set of user inputs that includes a selection of media content.

7. Claim 12

Al-Shaykh (Grounds I-IV) discloses detecting a method, *wherein detecting the set of inputs comprises detecting selection of a button on the control interface*, as recited in claim 12.

Al-Shaykh discloses detecting a set of inputs, as explained in Section VII.A.3.d. Further, Al-Shaykh discloses that the media transfer control 51 or control/indication element 71 "may be presented as a touchable button" that is selected to transfer playback. Al-Shaykh, [0107], [0121]; *see* Bims, ¶¶154-155.

8. Claims 18-24 and 27-29

Claims 18-24 are substantively identical to claims 6-12, respectively, and the prior art references teach claims 18-24 for the reasons discussed above. *See* Sections VII.B.1-VII.B.7; Bims, ¶156. Claims 27-29 are substantively identical to claims 10-12, respectively, and the prior art references teach claims 27-29 for the reasons discussed above. *See* Sections VII.B.5-VII.B.7; Bims, ¶156.

C. Dependent Claims 2 and 14

Grounds V-VIII, which merely add Ramsay to Grounds I-IV, disclose dependent claims 2 and 14.

1. Ramsay

Ramsay discloses "systems and methods for providing media playback in a networked environment." Ramsay, Abstract. Ramsay details a control device (e.g, "cellular telephone") that controls one or more wireless speakers. *Id.*, 6:48-52, 1:7-16, 5:18-30.

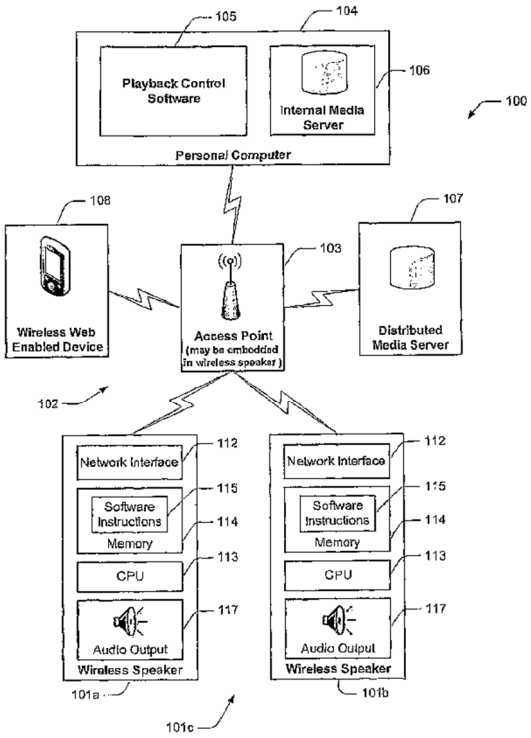


FIG. 1

Ramsay, Figure 1

Ramsay also provides a GUI for the control device. For example, Fig. 4B shows a possible GUI for the control device that allows a user to (i) control playback on one or more speakers, speaker groups, or speaker zones, (ii) choose

media to playback on the selected speakers, groups, or zones , and (iii) send playback controls to the selected speakers, groups, or zones. *Id.*, 11:37-47, Fig. 4B.

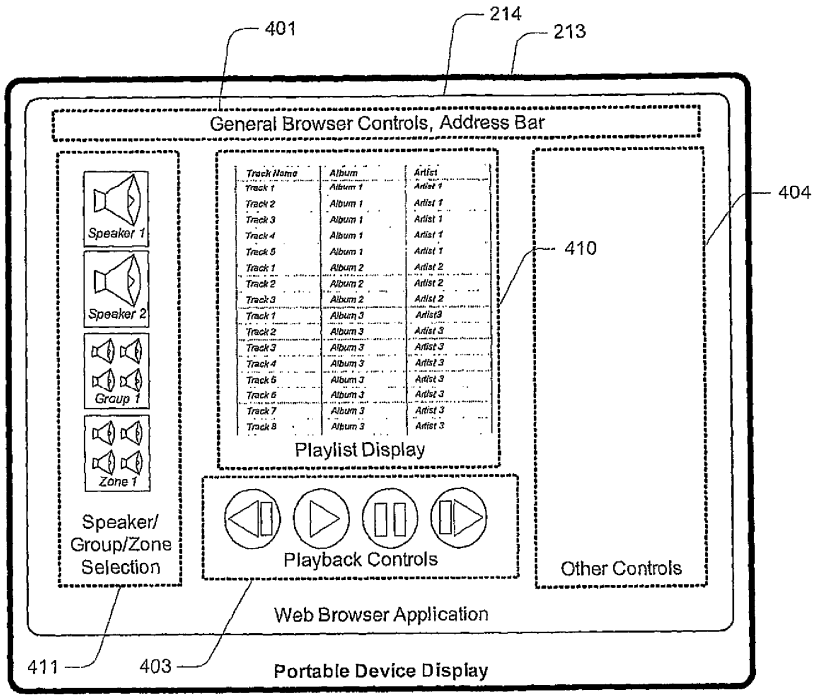


FIG. 4B

Ramsay Figure 4B

Ramsay is directed toward various speaker configurations that allow users increased flexibility to create speaker arrangements with varying degrees of complexity to meet the user's needs. *Id.*, 5:34-6:47, 22:25-63, Figs. 17 and 4B. Playback can be controlled at individual wireless speakers, wireless speaker groups that include a plurality of wireless speakers (e.g., "stereo pairs"), and wireless speaker zones that include multiple wireless speakers or speaker groups and "allow synchronous playback of audio across a region, such as a floor of a house." *Id.*,

6:35-40. For example, playback may be controlled in a zone that has two speakers acting as a stereo pair ("i.e. one speaker renders and plays back a left channel signal, the other a right channel signal"). *Id.*, 5:51-62, 6:30-43, Fig. 1.

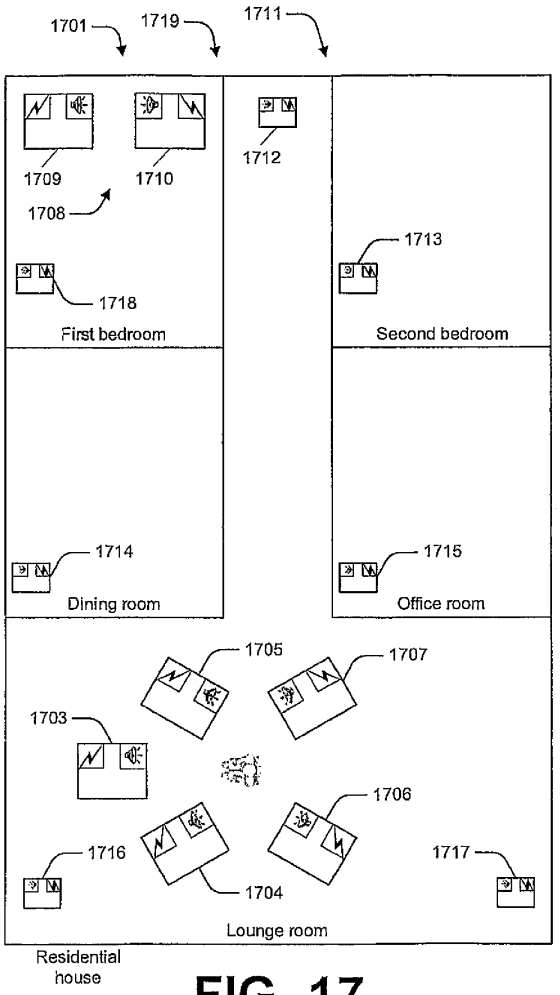


FIG. 17

Ramsay, Figure 17

Ramsay is thus analogous to the '615 patent because it is in the same field of endeavor, providing a network media playback system that describes a GUI for a control device to control playback at wireless speakers. '615 Patent, 2:4-9, 3:17-37,

4:1-12, 5:12-6:4, 10:13-52, Fig. 6; *In re Bigio*, 381 F.3d at 1325. For example, Ramsay, like the '615 patent explains that it is directed to the "providing media playback in a networked environment" that can include speakers in various arrangements or configurations. Ramsay, 1:7-17, 5:63-6:47. Thus, Ramsay is analogous art to the '615 patent. *In re Bigio*, 381 F.3d at 1325; *See* Bims, ¶¶158-167.

2. A POSA would have been motivated to add Ramsay to any of Grounds I-IV

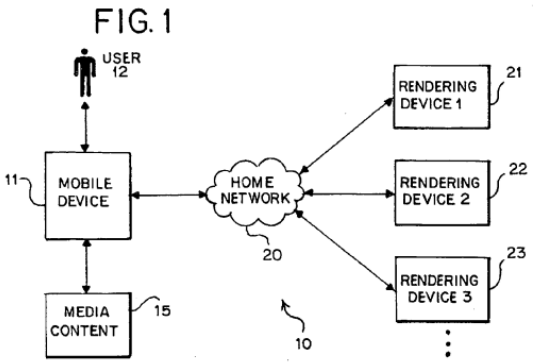
A POSA would have been motivated to and would have found it obvious to replace Al-Shaykh's rendering devices with Ramsay's wireless speaker sets (e.g., stereo pairs) and speaker zones. Bims, ¶¶168-172.

Al-Shaykh and Ramsay are in the same field of endeavor, deal with similar devices, and are directed to solving the same problems in those devices. Bims, ¶169. For example, Ramsay generally discloses "systems and methods for providing media playback in a networked environment" and controlling playback on wireless speakers, speaker groups, or speaker zones. Ramsay, Abstract, 1:6-17, 5:63-6:47. For example, Ramsay discloses controlling playback on wireless speaker sets that include two wireless speakers acting as a "stereo pair." *Id.*, 5:61-62. Ramsay also discloses controlling playback across different rooms or zones in a house, each of which include speakers. *Id.*, 6:30-47, 11:37-47, 20:8-19, 22:25-63,

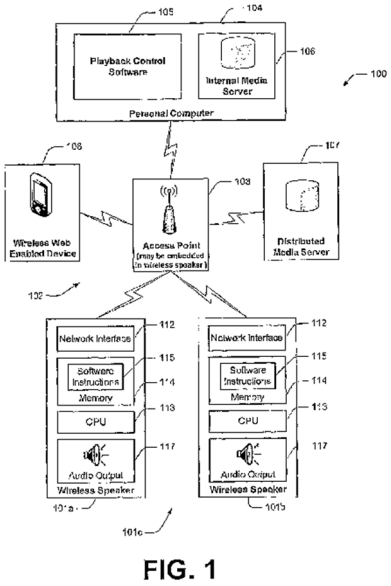
Figs. 4B and 11. Similarly, Al-Shaykh "generally relates to a system and a method for transferring media content from a mobile device to a home network," which includes one or more rendering devices and control playback at the rendering devices through the mobile device. Al-Shaykh, [0002], [0085], [0088]. Thus, both references enable users to control playback to various devices and playback content on those devices. Ramsay further discloses its wireless speakers to have storage space to upload information onto the speakers, such as relevant files. Ramsay, 9:14-42. Thus, Ramsay is compatible with the functionality added from Qureshey to Al-Shaykh's system. *See supra* Sections III.B, VII.A.2.f, VII.A.2.i.

Both Al-Shaykh and Ramsay describe networked media playback systems that include a control device and one or more rendering devices. *See* Bims, ¶170; Al-Shaykh, Abstract, [0078], Fig. 1 (showing mobile device 11 and rendering devices 21, 22, 23 in home network 20); Ramsay, Figs. 1, 2A-2B, 2C (showing a wireless web-enabled control device 108 and wireless speaker set 101c comprised of wireless speakers 101a and 101b). Thus, Al-Shaykh and Ramsay involve similar media playback systems that are often used in homes or offices and allow users the flexibility of playing content on various device configurations for different scenarios. *See* Al-Shaykh, [0005] ("the user may render the music content on a high quality stereo in the home instead of being limited to playback using the mobile device."); Ramsay, 22:25-64, Fig. 17. Ramsay describes additional

configuration options for a user to choose from, such as playing back content on a set of speakers that act as a stereo pair or across multiple speaker zones in a house. Ramsay, 5:61-62, 6:30-47, 11:37-47, 20:8-19, 22:25-64, Figs. 4B and 11. Qureshey also describes similar systems and devices. *See* Sections III.B, VII.A.2.f, VII.A.2.i.



Al-Shaykh, Fig. 1



Ramsay, Fig. 1

Additionally, the references are directed toward solving similar problems. *See* Bims, ¶171. For example, Al-Shaykh and Ramsay disclose methods to allow users enhanced flexibility to control playback at playback devices in desired arrangements or configurations that can provide, for example, higher quality playback or playback across regions in synchrony. Ramsay, 11:37-47, 22:25-63, Figs 4B and 17; Al-Shaykh, [0053], [0138]. Ramsay provides additional flexibility

to allow users to control playback on a set of stereo speakers, which provide an immersive music experience and surround sound capability. Ramsay, 5:61-62; Bims, ¶171. Alternatively, Ramsay also allows users the flexibility to control playback on speakers in different zones in a house, which increases the playback coverage to the user's desire. Ramsay, 6:30-47, 11:37-47, 20:8-19, 22:25-63, Figs. 4B and 11; Bims, ¶¶171-172.

For at least the reasons noted above, Al-Shaykh and Ramsay are analogous art to the '615 patent, and a POSA would have found it obvious to combine them. *In re Clay*, 966 F.2d at 659.

3. Claim 2

a. [2-a]

Al-Shaykh and Ramsay (Grounds V and VI) disclose detecting a method, *wherein detecting the set of inputs to transfer playback from the control device to the particular playback device comprises detecting a set of inputs to transfer playback from the control device to a particular zone of a media playback system that includes the particular playback device as a first channel of a stereo pair and an additional playback device as a second channel of the stereo pair*, as recited in element [2-a]. *See* Bims, ¶¶173-175.

Al-Shaykh discloses all of the elements of this limitation except that the particular playback device is a *particular zone of a media playback system that*

includes the particular playback device as a first channel of a stereo pair and an additional playback device as a second channel of the stereo pair. *See supra* Section VII.A.3.d. However, Ramsay discloses this element. Bims, ¶174. Specifically, Ramsay discloses a personal computer that controls playback at a "wireless speaker set 101c" that includes two individually controllable wireless speakers and is within a networked playback system. Ramsay, 4:59-5:62, Fig. 1. The speaker set "operate[es] as a stereo pair (i.e. one speaker renders and plays back a left channel signal, the other a right channel signal)." *Id.* The speaker set can be within a particular zone, such as a bedroom. *Id.*, 22:25-63, Fig. 17.

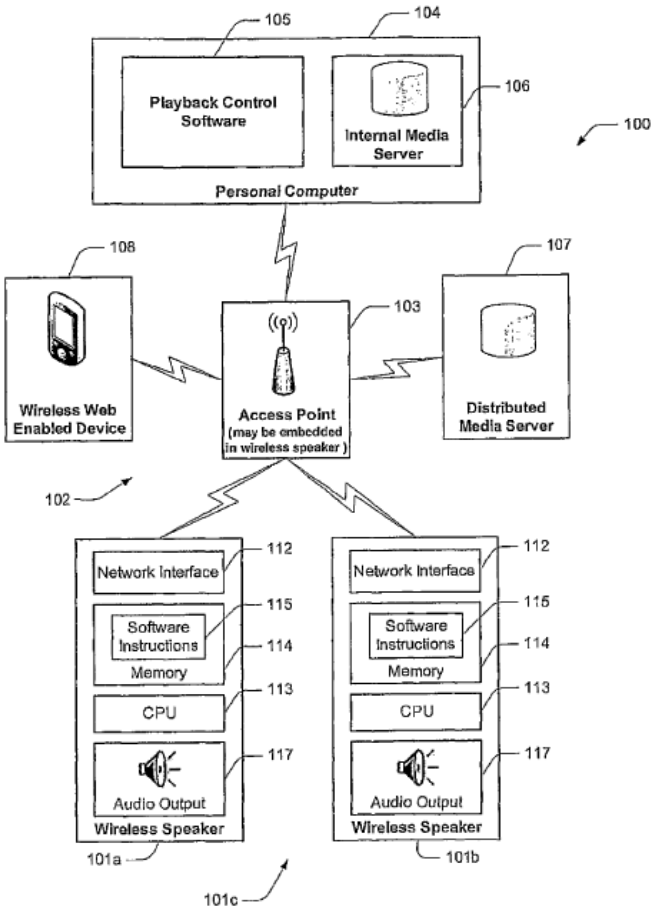


FIG. 1

Ramsay, Figure 1

Thus, Ramsay's wireless speaker set is a particular zone within a media playback system, wherein the zone includes two playback devices that act as a stereo pair. *See* Bims, ¶175. Further, a POSA would have been motivated to and would have found it obvious to replace Al-Shaykh's rendering devices with Ramsay's wireless speaker sets and zones, as explained in Section VII.C.2.

b. [2-b]

Al-Shaykh and Ramsay (Grounds V and VI) discloses detecting a method, *wherein modifying the one or more transport controls of the control interface to control playback by the particular playback device comprises causing the one or more transport controls of the control interface to control playback by the particular playback device and the additional playback device*, as recited in element [2-b]. *See* Bims, ¶¶176-178.

Al-Shaykh discloses all of the elements of this limitation except that the transport controls control playback by both *the particular playback device and the additional playback device*. *See supra* Section VII.A.3.h. However, Ramsay discloses this element. *See* Bims, ¶177. Specifically, Ramsay discloses adjusting playback controls 400 that are found on Ramsay's control interface in a manner that controls both speakers in the wireless speaker set. Ramsay, 11:38-47 ("region 411 allows a user to select between one or more available groups, zones and/or individual speakers to control … the control interface under consideration is able to be used to control a plurality of speakers/groups/zones, a by way of region 411 the user is able to select which of those is to be controlled at a given time"), 18:29-41, Fig. 4B.

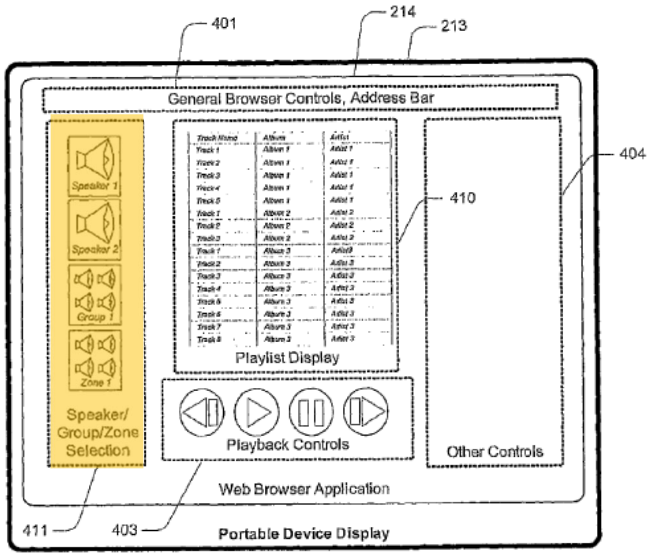


FIG. 4B

Ramsay, Figure 4B (annotated)

Further, a POSA would have been motivated to and would have found it obvious to replace Al-Shaykh's rendering devices with Ramsay's wireless speaker sets and zones, as explained in Section VII.C.2. *See* Bims, ¶178.

c. [2-c]

Al-Shaykh and Ramsay (Grounds V and VI) disclose detecting a method, *wherein the particular playback device playing back the retrieved multimedia content comprises the particular playback device and the additional playback device playing back the multimedia content as the stereo pair* as recited in element [2-c]. *See* Bims, ¶¶179-180.

Al-Shaykh discloses all of the elements of this limitation except that the particular playback device playing back the content requires *the particular*

playback device and the additional playback device playing back the multimedia content as the stereo pair. *See supra* Section VII.A.3.d. However, Ramsay discloses this element as explained in Section VII.C.3.a. Further, a POSA would have been motivated to and would have found it obvious to replace Al-Shaykh's rendering devices with Ramsay's wireless speaker sets and zones, as explained in in Section VII.C.2. *See* Bims, ¶¶179-180.

4. Claim 14

Claims 14 is substantively identical to claim 2 and the prior art references teach claims 14 for the reasons discussed above. *See* Sections VII.C.3; Bims, ¶181.

VIII. Non-Institution Under Section 325 Would Be Improper

Non-institution under 35 U.S.C. § 325 would also be improper based on a weighing of the factors set forth in *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017). The asserted combinations are materially different and not cumulative of the prior art involved during the examination of the challenged claims. During prosecution, the examiner asserted the following references: Dacosta (U.S. Pub. No. 2008/0134256), Dua (U.S. Pub. No. 2006/0258289), Ellis (U.S. Pub. No. 2010/10005496), Emerson (U.S. Pub. No. 2010/0306815), McCoy (U.S. Pub. No. 2012/0117586), Millington (U.S. Pub. No. 2012/0192071), Roberts (U.S. Pub. No. 2012/0304233), Sullivan (U.S. Pub. No. 2003/0198257), Togashi (U.S. Pub. No. 2005/0235334), Wilhelm

(U.S. Pat. No. US 8,364,296), and Zott (U.S. Pub. No. 2009/10228919). The primary combinations in this petition, none of which were applied in a rejection by the Examiner during prosecution, are materially different from and not cumulative of the earlier references at least because they each describe a controller "causing one or more first cloud servers to add multimedia content to a local playback queue on the particular playback device" and "causing the particular playback device to play back the multimedia content, wherein the particular playback device playing back the multimedia content comprises the particular playback device retrieving the multimedia content from one or more second cloud servers of a streaming content service and playing back the retrieved multimedia content." Ex. 1002, 545-549, 66. There is thus little to no overlap between the current and prior arguments. *Becton*, Paper 8 at 23. Al-Shaykh, Qureshey, and/or Phillips, as combined in this Petition, teach these added limitations, making denial under § 325(d) improper. *See* Section VII.

IX. The Board Should Not Exercise Its Discretion to Deny Institution Under Section 314(A)

The Board should institute this proceeding because the relevant factors strongly weigh against discretionary denial under 35 U.S.C. § 314(a). Notably, Petitioner agrees to a *Sotera* stipulation which, under Factor 4 of the *Fintiv* factors, strongly favors institution. *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019,

Paper 12 at 18-19 (PTAB Dec. 1, 2020) (precedential as to § II.A). *See* Ex. 1024. Further, on September 27, 2021, the Federal Circuit ordered the transfer of the parallel district court proceeding from the Western District of Texas to the Northern District of California and, thus, Factor 2 strongly favors institution because all pending case dates have been vacated and no case schedule or trial date currently is set. *See* Ex. 1020. The remaining *Fintiv* factors support institution because Factors 1, 3, and 6 also weigh in favor of institution or are neutral, and Factor 5—although historically viewed as favoring denial—should, at worst, be viewed as neutral to avoid frustrating Congress's desire that this proceeding be an alternative to litigation.[4] *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020 (precedential).

[4] The Office has sought comments on whether to adopt a different standard or to evaluate the *Fintiv* factors differently when evaluating discretionary denials under 35 U.S.C. § 314(a). 85 Fed. Reg. 66,502-06 (Oct. 20, 2020). Petitioner reserves the right to request supplemental briefing or rehearing under any changed considerations and/or if the facts of the parallel district court proceeding change further.

A. Factor 1: Whether the district court granted a stay or a stay may be granted if a proceeding is instituted

On September 27, 2021, the Federal Circuit ordered the transfer of the parallel district court proceeding from the Western District of Texas to the Northern District of California. Ex. 1020. Petitioner may request a stay pending IPR at the appropriate time after transfer is complete. At worst, this factor is neutral because determining how the Northern District of California might proceed would be merely speculative. *Sand Revolution II, LLC v. Cont'l Intermodal Group-Trucking LLC*, IPR2019-01393, Paper 24 at 11-12 (PTAB June 16, 2020) (informative).

B. Factor 2: Proximity of the court's trial date to the Board's projected statutory deadline for a final written decision

No trial date or case schedule is currently set in California, after the Federal Circuit ordered the transfer from the Western District of Texas.

C. Factor 3: Investment in the parallel proceeding by the court and the parties

Given the transfer of the parallel district court proceeding from the Western District of Texas to the Northern District of California, the case schedule is unknown. The parties have engaged in little discovery beyond that required for venue and claim construction purposes. Thus, the amount of investment in the parallel proceeding, once it transfers to the Northern District of California, may be minimal.

Regardless, significant stages of the litigation will remain. For example, discovery had only recently begun in the Western District of Texas before the Federal Circuit's order requiring transfer and was scheduled to remain open until early to mid-2022. Ex. 1018 (Scheduling Order). Now, it is even more likely that, at institution, discovery will be ongoing or, possibly, just restarting once the case is transferred to the Northern District of California.

Further, this petition already incorporates the constructions from the claim construction order from the Western District of Texas, negating concerns regarding contradictory decisions in parallel proceedings.

Thus, this factor favors not exercising discretion to deny institution or, at the worst, is neutral given the uncertainty of how the case will proceed once the transfer to the Northern District of California is complete. *Sand Revolution II*, Paper 24 at 11-12 (informative).

D. Factor 4: Overlap between issues raised in the petition and in the parallel proceeding

Petitioner has agreed to a *Sotera* stipulation that, if this petition is instituted, Petitioner will not pursue any ground that was raised or could reasonably have been raised in this petition in the related litigation in the Northern District of California.[5]

[5] Petitioner reserves the right to withdraw this stipulation should the underlying decisions requiring it, specifically, *Sotera* or *Fintiv*, be reversed or withdrawn pursuant to the pending USPTO request for comments or otherwise.

See Ex. 1024. Thus, there will be no overlap of invalidity issues between the district court litigation and this petition. This factor strongly weighs in favor of institution. *Sotera Wireless, Inc.*, Paper 12 at 18-19; *Sand Revolution II*, Paper 24 at 11-12.

Further, Sonos asserts claims 1-3, 6-9, 11-15, 18-21, 23-26, 28-29. *See generally* Ex. 1013. This Petition challenges additional claims (claims 10, 22, and 27), which weighs in favor of institution. *3Shape A/S v. Align Tech., Inc.*, IPR2020-00223, Paper 12 at 34 (PTAB May 26, 2020).

E. Factor 5: Whether the petitioner and the defendant in the parallel proceeding are the same party

The parties are the same as the district court litigation. The Board historically treats this as weighing against institution, but at least one administrative judge has recognized that *Fintiv* "says nothing about situations in which petitioner is the same as … the district court defendant." *Cisco Sys., Inc. v. Ramot at Tel Aviv Univ. Ltd.*, IPR2020-00133, Paper 15, at 10 (J. Crumbley dissenting) (PTAB May 15, 2020). That judge asserted that this factor should be, at worst, neutral because the Board's interpretation "tip[s] the scales against a petitioner merely for being a defendant in the district court action" brought without its consent and is "contrary to the goal of providing *district court litigants* an alternative venue to resolve questions of validity." *Id.* (emphasis added). This factor should be neutral.

F. Factor 6: Other circumstances that impact the Board's exercise of discretion, including the merits

As shown above, the merits of the petition are also strong. *3Shape A/S v. Align Tech., Inc.*, IPR2020-00223, Paper 12, at 34 (PTAB May 26, 2020) (differences in issues and strength of merits "outweigh[ed] other applicable factors," including trial date before final written decision). Moreover, the prior art asserted in the Petition was not applied by the Office during prosecution. *See supra* Section VIII. Because the asserted references were not applied during prosecution and are materially different and not cumulative of the prior art involved during the examination of the challenged claims, the considerations under 35 U.S.C. § 325(d), related to art previously before the office, favor institution. *See supra* Section VIII. This is also the first petition challenging the claims of the '615 patent, making considerations related to follow-on petitions moot.

Each of these additional considerations weighs in favor of institution.

X. Grounds for Standing

Petitioner certifies that the '615 patent is available for *inter partes* review and that Petitioner is not barred or estopped from requesting *inter partes* review. Petitioner filed the above Petition within one year of service of the complaint against Petitioner in the Texas litigation identified above. In the California litigation identified above, Petitioner seeks a declaratory judgment of non-infringement of the

'615 patent; Petitioner has not filed a civil action challenging the validity of any '615 patent claim.

XI. Mandatory Notices

A. Real Parties-in-Interest

The real parties-in-interest are Google LLC[6].

B. Related Matters

To the best of Petitioner's knowledge, the '615 patent has been or is involved in at least each of the following district court litigations:

Name	Number	Court	Filed
Sonos, Inc. v. Google LLC	6:20-cv-00881	W.D. Tex.	Sept. 29, 2020
Google LLC v. Sonos, Inc.	3:20-cv-06754	N.D. Cal.	Sept. 28, 2020

[6] Google LLC is a subsidiary of XXVI Holdings Inc., which is a subsidiary of Alphabet Inc. XXVI Holdings Inc. and Alphabet Inc. are not real parties-in-interest to this proceeding.

C. Lead and Back-Up Counsel, and Service Information

Lead Counsel	Back-Up Counsel
Erika H. Arner (Reg. No. 57,540) erika.arner@finnegan.com Finnegan, Henderson, Farabow, Garrett & Dunner, LLP 1875 Explorer Street, Suite 800 Reston, VA 20190-6023 Tel: 571-203-2700 Fax: 202-408-4400	Cory C. Bell (Reg. No. 75,096) cory.bell@finnegan.com Finnegan, Henderson, Farabow, Garrett & Dunner, LLP Two Seaport Lane Boston, MA 02210-1641 Tel: 617-646-1600 Fax: 202-408-4400 Kara A. Specht (Reg. No. 69,560) kara.specht@finnegan.com Finnegan, Henderson, Farabow, Garrett & Dunner, LLP 271 17th Street, NW, Suite 1400 Atlanta, GA 30363-6209 Tel: 404-653-6400 Fax: 404-653-6444 Umber Aggarwal (Reg. No. 76,098) umber.aggarwal@finnegan.com Finnegan, Henderson, Farabow, Garrett & Dunner, LLP 901 New York Avenue, NW Washington, DC 20001-4413 Tel: 202-408-4000 Fax: 202-408-4400

Please address all correspondence to lead counsel and back-up counsel at the addresses shown above. Petitioner consents to electronic service by email.

XII. Conclusion

Petitioner asks that the Board institute review and cancel the challenged claims.

Dated: September 28, 2021

Respectfully submitted,

/Erika H. Arner/
Erika H. Arner (Reg. No. 57,540)
Counsel for Petitioner

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(a)(1)(i), the undersigned hereby certifies that the foregoing PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 9,967,615 contains 13,427 words, excluding parts of this Petition exempted under § 42.24(a), as measured by the word-processing system used to prepare this paper.

Dated: September 28, 2021

/Cory C. Bell/
Cory C. Bell (Reg. No. 75,096)
Counsel for Petitioner

CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing Petition for *Inter Partes* Review, the associated Power of Attorney, and Exhibits 1001-1024 were served on September 28, 2021, by Priority Mail Express or by means at least as fast and reliable as Priority Mail Express at the following address of record for the subject patent at:

Benjamin Urban
Akerman LLP
777 S. Flagler Drive
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West Palm Beach, FL 33401

A courtesy copy is also being sent via Priority Mail Express to litigation counsel at:

Clement S. Roberts
Orrick, Herrington & Sutcliffe LLP
405 Howard Street
San Francisco, CA 94105

Date: September 28, 2021

By: /Daniel E. Doku/
Daniel E. Doku
Litigation Legal Assistant
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, LLP

Trials@uspto.gov
571-272-7822

Paper 14
Date: April 12, 2022

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

SONOS, INC.,
Patent Owner.

IPR2021-01563
Patent 9,967,615 B2

Before MICHAEL R. ZECHER, TERRENCE W. McMILLIN, and GARTH D. BAER, *Administrative Patent Judges.*

McMILLIN, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. Background and Summary

On September 28, 2021, Google LLC ("Petitioner")[1] filed a Petition for *inter partes* review of claims 1, 2, 6–14, 18–25, and 27–29 (the "challenged claims") of U.S. Patent No. 9,967,615 B2 (Ex. 1001, "the '615 patent"). Paper 1 ("Pet."). Sonos, Inc. ("Patent Owner")[2] filed a Preliminary Response. Paper 6 ("Preliminary Response" or "Prelim. Resp."). With our authorization, Petitioner thereafter filed a Reply to Patent Owner's Preliminary Response (Paper 8 ("Reply")) and Patent Owner filed a Sur-reply in Support of its Preliminary Response (Paper 12 ("Sur-reply")) to address the issue of discretionary denial under 35 U.S.C. § 314.[3]

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a) (2020) (permitting the Board to institute trial on behalf of the Director). The standard for institution is set forth in 35 U.S.C. § 314(a), which provides that *inter partes* review may not be instituted unless "there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." After considering the Petition, the Preliminary Response, the Reply, the Sur-reply, and the evidence of record, we institute an *inter*

[1] Petitioner identifies itself, Google LLC, as the real party-in-interest to this proceeding. Pet. 76.
[2] Patent Owner identifies itself, Sonos, Inc., as the real party-in-interest to this proceeding. Paper 3, 1.
[3] Additionally, with our authorization, Patent Owner filed a Motion to Dismiss Under 35 U.S.C. § 315(a) (Paper 7, "Motion") and Petitioner filed an Opposition to Patent Owner's Motion to Dismiss (Paper 10). We denied this Motion on April 12, 2022 (Paper 13).

partes review as to the challenged claims of the '615 patent on the grounds presented.

B. Related Proceedings

The parties identify *Google LLC v. Sonos, Inc.*, No. 3:20-cv-06754 (N.D. Cal.) as a related proceeding in which the '615 patent is asserted. Pet. 76; Paper 3, 1. The Parties also identify *Sonos, Inc. v. Google LLC*, No. 3:21-cv-07559 (N.D. Cal.), which was transferred from the Western District of Texas (*Sonos, Inc. v. Google LLC*, No. 6:20-cv-00881 (W.D. Tex.)), as involving the '615 patent. Pet. 76; Prelim. Resp. 1; Reply 2.

C. The '615 Patent

The '615 patent is titled "Networked Music Playback." Ex. 1001, code (54). The '615 patent relates to "providing music for playback via one or more devices on a playback data network." *Id.* at 1:14–15. In particular, the '615 patent describes connecting one or more multimedia playback devices via a network to share music and other multimedia content among devices. *Id.* at 1:66–2:9. The '615 patent also describes facilitating music streaming from a music-playing application to one or more multimedia content playback systems and locations. *Id.* at 2:10–17, 12:8–14.

Figure 7 of the '615 patent, reproduced below, shows an embodiment using a cloud-based network to distribute content on one or more local networks of multimedia playback devices. *Id.* at 12:19–25.

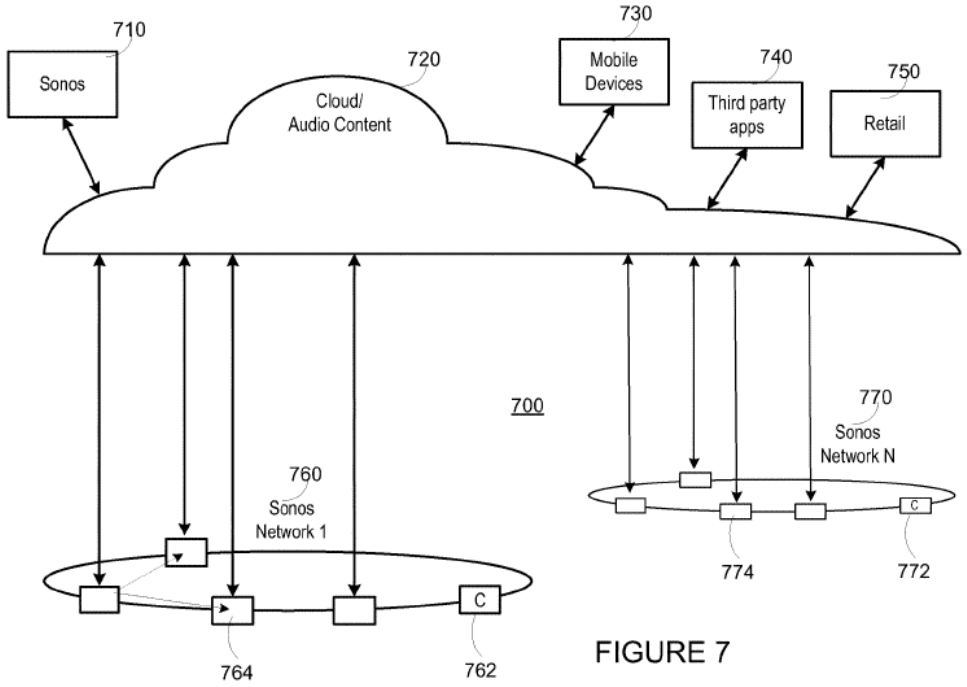

FIGURE 7

Figure 7 of the '615 patent depicts system 700 including cloud network 710, content providers 720, 730, 740, 750, and local playback networks 760, 770. *Id.* at 12:31–34. Using cloud 710, content providers 720, 730, 740, 750 provide multimedia content to controllers 762, 772 and local playback devices 762, 770 in local playback networks 760, 770. *Id.* at 12:34–43.

> For example, a user listens to a third party music application (e.g., Pandora™ Rhapsody™, Spotify™, and so on) on her smart phone while commuting. She's enjoying the current channel and, as she walks in the door to her home, selects an option to continue playing that channel on her household music playback system (e.g., Sonos™). The playback system picks up from the same spot on the selected channel that was on her phone and outputs that content (e.g., that song) on speakers and/or other playback devices connected to the household playback system. A uniform resource indicator (URI) (e.g., a uniform resource locator (URL)) can be passed to a playback device to fetch content from a cloud and/or other networked source, for example. A playback device, such as a zone player, can fetch content on its own without use of a controller, for example. Once the zone player has a URL

> (or some other identification or address) for a song and/or playlist, the zone player can run on its own to fetch the content. Songs and/or other multimedia content can be retrieved from the Internet rather than a local device (e.g., a compact disc (CD)), for example.

Id. at 12:44–63.

D. Challenged Claims

Petitioner challenges claims 1, 2, 6–14, 18–25, and 27–29 of the '615 patent. Pet. 1. Of the challenged claims, claim 1 is an independent method claim, claim 13 is an independent non-transitory computer readable medium claim, and claim 25 is an independent system claim. Ex. 1001, 17:36–18:12, 19:48–20:27, 22:5–58. Claim 1 recites:

> 1. A method comprising:
>
> causing, via a control device, a graphical interface to display a control interface including one or more transport controls to control playback by the control device;
>
> after connecting to a local area network via a network interface, identifying, via the control device, playback devices connected to the local area network;
>
> causing, via the control device, the graphical interface to display a selectable option for transferring playback from the control device;
>
> detecting, via the control device, a set of inputs to transfer playback from the control device to a particular playback device, wherein the set of inputs comprises: (i) a selection of the selectable option for transferring playback from the control device and (ii) a selection of the particular playback device from the identified playback devices connected to the local area network;
>
> after detecting the set of inputs to transfer playback from the control device to the particular playback device, causing playback to be transferred from the control device to the particular playback device, wherein transferring playback from the control device to the particular playback device comprises:

> (a) causing one or more first cloud servers to add multimedia content to a local playback queue on the particular playback device, wherein adding the multimedia content to the local playback queue comprises the one or more first cloud servers adding, to the local playback queue, one or more resource locators corresponding to respective locations of the multimedia content at one or more second cloud servers of a streaming content service;
>
> (b) causing playback at the control device to be stopped; and
>
> (c) modifying the one or more transport controls of the control interface to control playback by the playback device; and
>
> causing the particular playback device to play back the multimedia content, wherein the particular playback device playing back the multimedia content comprises the particular playback device retrieving the multimedia content from one or more second cloud servers of a streaming content service and playing back the retrieved multimedia content.

Id. at 17:36–18:12.

E. The Asserted Grounds

Petitioner challenges claims 1, 2, 6–14, 18–25, and 27–29 of the '615 patent based on the grounds set forth in the table below.

Claims Challenged	35 U.S.C. §	References
1, 6–13, 18–25, 27–29	103[4]	Al-Shaykh[5], Qureshey[6]
1, 6–13, 18–25, 27–29	103	Al-Shaykh, Qureshey, Phillips[7]

[4] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011), revised 35 U.S.C. § 103 effective March 16, 2013. Because the challenged patent claims priority to applications filed before March 16, 2013, we refer to the pre-AIA version of § 103. Our opinions on the present record would not change if the AIA version of § 103 were to apply.

[5] US 2011/0131520 A1, published June 2, 2011 (Ex. 1007).

[6] US 8,050,652 B2, issued Nov. 1, 2011 (Ex. 1008).

[7] US 8,799,496 B2, issued Aug. 5, 2014 (Ex. 1006).

Claims Challenged	35 U.S.C. §	References
2, 14	103	Al-Shaykh, Qureshey, Ramsay[8]
2, 14	103	Al-Shaykh, Qureshey, Phillips, Ramsay

Pet. 2–3. Petitioner relies on the Declaration of Dr. Harry Bims (Ex. 1003, "Bims Decl."), which provides evidence in support of the contentions in the Petition. Patent Owner has not submitted a declaration or other testimonial evidence of an expert so, at least at this stage, there is no testimony contrary to that of Dr. Bims to consider.[9]

II. ANALYSIS

A. Discretionary Denial Under 35 U.S.C. § 314(a)

As a threshold matter, we consider the arguments and evidence of the parties relating to discretionary denial under 35 U.S.C. § 314(a). Institution of *inter partes* review is discretionary. *See Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) ("[T]he PTO is permitted, but never compelled, to institute an IPR proceeding."); 35 U.S.C. § 314(a). The Board has held that the advanced state of a parallel district court action is a factor that may weigh in favor of denying a petition under § 314(a). *See NHK Spring Co. v. Intri-Plex Techs., Inc.*, IPR2018-00752, Paper 8 at 20 (PTAB Sept. 12, 2018) (precedential); Patent Trial and Appeal Board, Consolidated Trial Practice Guide, 58 & n.2 (Nov. 2019) ("Trial Practice Guide"), available at https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf. We consider the following factors to assess "whether efficiency,

[8] US 8,724,600 B2, issued May 13, 2014 (Ex. 1009).
[9] The Patent Owner's Preliminary Response and Sur-reply are limited to arguing that the Petition should be discretionarily denied under 35 U.S.C. § 314(a). Thus, at this stage, Petitioner's unpatentability arguments and evidence are not disputed in any regard by Patent Owner.

fairness, and the merits support the exercise of authority to deny institution in view of an earlier trial date in the parallel proceeding":

1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. proximity of the court's trial date to the Board's projected statutory deadline for a final written decision;
3. investment in the parallel proceeding by the court and the parties;
4. overlap between issues raised in the petition and in the parallel proceeding;
5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
6. other circumstances that impact the Board's exercise of discretion, including the merits.

Apple Inc. v. Fintiv, Inc., IPR2020-00019, Paper 11 at 5–6 (PTAB Mar. 20, 2020) (precedential) ("*Fintiv*"). In evaluating these factors, we "take[] a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review." *Id.* at 6.

Patent Owner argues that "[e]very factor weighs in favor of denial" and "the Board should deny institution." Prelim. Resp. 1. Petitioner argues "[t]he Board should institute this proceeding because the relevant factors strongly weigh against discretionary denial under 35 U.S.C. § 314(a)." Pet. 70. Based on our review of the arguments and evidence, we determine not to exercise our discretion to deny institution under 35 U.S.C. § 314(a).

1. Whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted

Fintiv indicated that, in previous Board decisions, the existence of a stay pending Board resolution of an *inter partes* review has weighed strongly against denial, while a denial of such a stay request sometimes weighs in favor of denial. *Fintiv*, Paper 11 at 6–8.

No stay exists in either of the pending district court proceedings. Pet. 72; Prelim. Resp. 3. Petitioner told the court that it would not move for a stay. Prelim. Resp. 3. Therefore, this factor weighs in favor of exercising our discretion to deny institution.

2. Proximity of the court's trial date to the Board's projected statutory deadline for a final written decision

The proximity factor in *Fintiv*, on its face, asks us to evaluate our discretion in light of a trial date that has been set in a parallel litigation. *See Fintiv*, Paper 11 at 3, 5 ("*NHK* applies to the situation where the district court has set a trial date to occur earlier than the Board's deadline to issue a final written decision in an instituted proceeding."; "When the patent owner raises an argument for discretionary denial under *NHK* due to an earlier trial date, the Board's decisions have balanced the following factors . . . .") (citing *NHK*, Paper 8 (footnote omitted)). As noted above in the discussion of a stay, *Fintiv* has expressed concern regarding "inefficiency and duplication of efforts." *Id.* at 6. In its analysis of the proximity factor, *Fintiv* echoes that concern in its guidance that "[i]f the court's trial date is at or around the same time as the projected statutory deadline or even significantly after the projected statutory deadline, the decision whether to institute will likely implicate other factors discussed herein, such as the resources that have been invested in the parallel proceeding." *Id.* at 9. Similarly, in *NHK*, the Board expressed the concern that a trial before the deadline for a final written decision addressing the same prior art and arguments would have undermined the Board's objectives of providing an effective and efficient alternative to district court litigation. *NHK*, Paper 8 at 20 (citing *Gen. Plastic*, Paper 19 at 16–17).

The court set a trial date of May 10, 2023.[10] Ex. 2003, 4. This is after our projected statutory deadline for a final written decision in April, 2023. *See* Prelim. Resp. 5 ("According to the one-year statutory timeline, if instituted, a final written decision would be expected around April 25, 2023."). Thus, this proceeding will be concluded before the parallel proceedings in district court.

Patent Owner argues, however, that the court has invoked its "patent showdown procedure" and that trial on one claim of the '615 patent may take place as early as the summer of 2022.[11] Prelim. Resp. 4–5; *see also* Ex. 2002 (Patent Showdown Scheduling Order). Petitioner argues "Patent Owner only speculates as to when the court may set the 'showdown' trial, which may not even occur." Reply 5. Petitioner further contends that, even if a "showdown" trial is held, it will have a narrow scope and, if this *inter partes* review proceeding is instituted, it will not overlap with this proceeding because it has stipulated that it "will not pursue in the Related Litigations the specific grounds in the Petition or any other ground raised or that could have reasonably been raised in the Petition." Reply 3, 5–6. Therefore, if we institute, the Board and the court will not be addressing the same prior art and arguments.

To the extent the court's Patent Showdown Scheduling Order is relevant, it sets a briefing schedule and a hearing date for a summary judgment motion on one claim of the '615 patent. *See* Ex. 2002, 1–2. But, it

[10] Petitioner indicates that both district court cases are proceeding according to the same schedule. Reply 5.
[11] Petitioner "elected independent claim 13 of the '615 Patent for the patent showdown procedure; whereas [Patent Owner] has elected a claim from a different patent." Prelim. Resp. 5 (footnote omitted).

does not indicate whether the issues of non-infringement, invalidity, or both of this one claim will be considered. *Id.* at 1 (the "alleged infringer [Petitioner] shall . . . select . . . one asserted claim—presumably the . . . strongest case for noninfringement or invalidity"). It further indicates "[i]f summary judgment fails to resolve the parties' dispute over the claim(s) asserted in the showdown, counsel should be prepared for a prompt trial on the remaining issues." *Id.* at 3. This Order does not indicate when this contingent trial will occur or what issues will be addressed. Forecasting what issues may remain following summary judgment briefing and hearing and when, or if, trial on these issues may occur would be speculation. And, whatever issues remain, the scope of the "showdown" trial will be narrow relative to the scope of the Petition. We, therefore, accord this potential "showdown" trial little weight in our consideration of this factor.

As trial in the parallel district court cases has been set for May 2023, and our final written decision is due before then, this factor weighs against exercising our discretion to deny institution.

3. Investment in the parallel proceeding by the court and the parties

Under this factor, "[t]he Board . . . consider[s] the amount and type of work already completed in the parallel litigation by the court and the parties at the time of the institution decision." *Fintiv*, Paper 11 at 9. "This investment factor is related to the trial date factor, in that more work completed by the parties and court in the parallel proceeding tends to support the arguments that the parallel proceeding is more advanced, a stay may be less likely, and instituting would lead to duplicative costs." *Id.* at 10.

Patent Owner argues that "[g]iven the substantial amount of work the parties and several courts have already completed, and the fact that Google

filed its petition on the last possible day despite knowing of the '615 Patent for over a year before any district court case was initiated, this factor weighs in favor of denial." Prelim. Resp. 10. Petitioner argues that "[t]his factor also favors institution because significant discovery and *Markman*-related deadlines remain in the Related Litigations" and "[m]ost of the substantial investments Patent Owner notes are irrelevant to the issues presented in the Petition." Reply 5–6. Petitioner also argues, "while the Petition was filed on the bar date, Petitioner did not engage in inexcusable delay, because it filed before Patent Owner responded to Petitioner's invalidity contentions." *Id.* at 7. Although the court and the parties have completed much work in the district court cases, it appears that no substantive orders have been entered and that the completed work does not overlap with the unpatentability issues in this proceeding. We determine this factor to be neutral or to weigh slightly in favor of denying institution.

4. Overlap between issues raised in the petition and in the parallel proceeding

"[I]f the petition includes the same or substantially the same claims, grounds, arguments, and evidence as presented in the parallel proceeding, this fact has favored denial." *Fintiv*, Paper 11 at 12. "Conversely, if the petition includes materially different grounds, arguments, and/or evidence than those presented in the district court, this fact has tended to weigh against exercising discretion to deny institution under *NHK*." *Id.* at 12–13.

Petitioner stipulates "that if the Board institutes its Petition, it will not pursue in the Related Litigations the specific grounds in the Petition or any other ground raised or that could have reasonably been raised in the Petition." Reply 3. We agree with Petitioner that this stipulation will prevent overlap between the factual and legal issues presented in the Petition

and the factual and legal issues in the district court cases. We also agree with Petitioner that "[b]ecause the institution decision will precede any potential trial; the district court and the Board will not conduct duplicative review or provide conflicting decisions. Petitioner's *Sotera* stipulation strongly favors institution." *Id.* (citing *Sotera Wireless, Inc. v. Masimo Corp.,* IPR2020- 01019, Paper 12 at 18-19 (PTAB Dec. 1, 2020) (precedential as to § II.A); *Sand Revolution II, LLC v. Cont'l Intermodal Grp.-Trucking LLC*, IPR2019- 01393, Paper 24 at 11-12 (PTAB June 16, 2020) (informative)).

This proceeding also involves substantially more claims of the '615 patent than the district court cases. Petitioner challenges claims 1, 2, 6–14, 18–25, and 27–29 (22 claims) in this proceeding. Pet. 1. "At issue in the district court now for the '615 patent are claims 13, 14, 15, 18, 19, 20, 21, 25, 26" (9 claims). Prelim. Resp. 14. There are 15 claims of the '615 patent (claims 1, 2, 6–12, 22–24, 27–29) challenged in the Petition that are not at issue in the district court.

Because the Board will not be considering the same or substantially the same claims, grounds, arguments, and evidence as presented in the district court litigations, we determine that this factor weighs heavily against exercising our discretion to deny institution.

5. Whether the petitioner and the defendant in the parallel proceeding are the same party

The parties are the same in the district court litigations. Pet. 74; Prelim. Resp. 16. However, our final written decision should precede trial in the district court and we are likely to address unpatentability first. Under these circumstances, estoppel pursuant to 35 U.S.C. §315(e)(2) is likely to apply and bar Petitioner from asserting that any challenged claim is invalid

on any ground that the Petitioner raised or reasonably could have raised during this proceeding. We determine, therefore, that this factor weighs against exercising our discretion to deny institution.

6. Other circumstances that impact the Board's exercise of discretion, including the merits

We consider the merits of the Petition to be strong. At least at this stage of this proceeding, Patent Owner does not challenge any aspect of Petitioner's unpatentability showing. *See generally* Prelim. Resp. Moreover, we are persuaded, based upon the arguments and the evidence presented in the Petition (and analyzed below), that the showing of unpatentability of the challenged claims is well-supported.

We determine that this factor weighs against exercising our discretion to deny institution.

7. Holistic Assessment of Factors and Conclusion

Applying a holistic view, we determine that the efficiency and integrity of the system are best served by institution. Thus, after considering the factors outlined in the precedential order in *Fintiv*, we do not exercise our discretion to deny institution under § 314(a).

B. Claim Construction

Claim construction in this proceeding is governed by 37 C.F.R. § 42.100(b), which provides:

> In an *inter partes* review proceeding, a claim of a patent, or a claim proposed in a motion to amend under §42.121, shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.

Under the standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–19 (Fed. Cir. 2005) (en banc), claim terms are given their ordinary and customary meaning, as would have been understood by a person of ordinary skill in the art at the time of the invention, in light of the language of the claims, the specification, and the prosecution history of record. *See Thorner v. Sony Comput. Ent. Am. LLC*, 669 F.3d 1362, 1365–66 (Fed. Cir. 2012). There is a "heavy presumption," however, that a claim term carries its ordinary and customary meaning. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (citation omitted). We only construe terms to the extent necessary to determine the dispute between the parties. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("[W]e need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy.'") (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Petitioner relies on claim constructions determined by the court and Patent Owner's proposed constructions for a number of terms. Pet. 12. The Petition states:

> In the related litigation, before the case was transferred, the District Court for the Western District of Texas held that the following terms that appear in the '615 patent should be construed to their plain and ordinary meanings: "multimedia," "network interface," "playback device," and "local area network." Exs. 1016-1017. Additionally, although dropped from consideration before argument and ruling, and thus not construed by the Texas district court, [Patent Owner] and the defendants agreed to construe "one or more transport controls to control playback" as "one or more user input elements, each enabling control of a respective playback-related function." Ex.

> 1012 at 4. Additionally, [Patent Owner] proposed construing "wireless communication interface" as "physical component of a device that provides a wireless interconnection with a local area network." *Id.* at 3.
>
> [Patent Owner] also asserted the plain and ordinary meaning for the following claim terms: "first cloud servers," "second cloud servers of a streaming content service," and "playback queue." *Id.* at 4. For the purposes of this IPR, [Petitioner] adopts the constructions of the District Court for the Western District of Texas and [Patent Owner] 's proposed claim constructions for those terms not presented for construction and construed by the district court. *See* Bims [Decl.], ¶¶38-40.

Id. Patent Owner does not present any claim construction arguments. *See generally* Prelim. Resp. We preliminarily adopt the constructions set forth in the Petition for the purpose of considering the merits of the Petition.[12] And, we determine that it is not necessary to discuss or construe any additional claim terms to decide whether trial should be instituted.

C. Legal Standards

A patent claim is unpatentable as obvious if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: we (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary

[12] We wish to hear from Patent Owner regarding claim construction and to have the record more fully developed prior to making any non-preliminary claim construction determinations.

skill in the art; and (4) objective evidence of non-obviousness.[13] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

"In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim")). Petitioners cannot satisfy their burden of proving obviousness by employing "mere conclusory statements." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

D. Level of Ordinary Skill in the Art

With regard to the level of ordinary skill in the art, Petitioner contends:

> A POSITA would have had a bachelor's degree in physics, mechanical engineering, electrical engineering, or audio engineering (or an equivalent degree), and three years of experience designing or implementing networked wireless systems related to streaming media over the Internet. Bims [Decl.], ¶¶20–23. With more education, for example, postgraduate degrees and/or study, less experience is needed to attain an ordinary level of skill in the art. Similarly, more experience can substitute for formal education. *Id.*

Pet. 11. Patent Owner does not address the level of ordinary skill in the art. *See generally* Prelim. Resp.

Petitioner's proposal is consistent with the technology described in the Specification and the cited prior art. In order to determine whether Petitioner has demonstrated a reasonable likelihood of showing the

[13] The parties have not asserted or otherwise directed our attention to any objective evidence of nonobviousness.

unpatentability of at least one of the challenged claims, we adopt Petitioner's proposed level of skill in the art.

E. Cited References

1. Al-Shaykh (Ex. 1007)

Al-Shaykh is titled "System and Method for Transferring Media Content from a Mobile Device to a Home Network." Ex. 1007, code (54). Al-Shaykh "relates to a system and a method which enable a media application on the mobile device to share media content with rendering devices in the home network." *Id.* ¶ 2.

Figure 1 of Al-Shaykh, reproduced below, "illustrates a system for transferring media content from a mobile device to a home network." *Id.* ¶ 68.

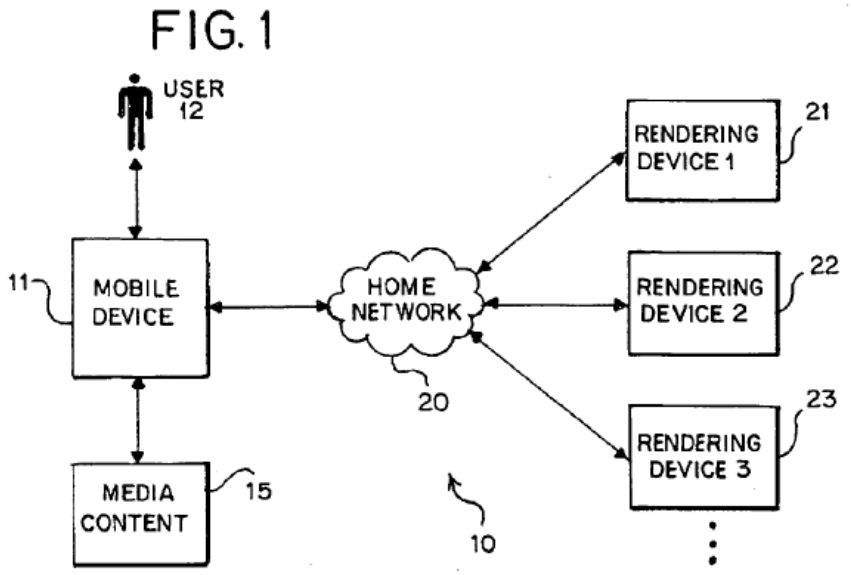

Figure 1 of Al-Shaykh, reproduced above, depicts system 10 for transferring media content 15 from mobile device 11 to rendering devices 21, 22, 23 on home network 20. *Id.* ¶ 78. "[M]obile device 11 may have a display screen capable of displaying user interface elements and/or visual media content." *Id.* Rendering devices 21, 22, 23 "may be any rendering device capable of

rendering the media content received using the home network 20 as known to one skilled in the art." *Id.* ¶ 81. Mobile device 11 uses a media application to access media content 15 stored locally or remotely provided via the Internet. *Id.* ¶¶ 82–83.

Figure 2, reproduced below, "illustrates a user interface of a media application having a set of controls and indications in an embodiment of the present invention." *Id.* ¶ 69.

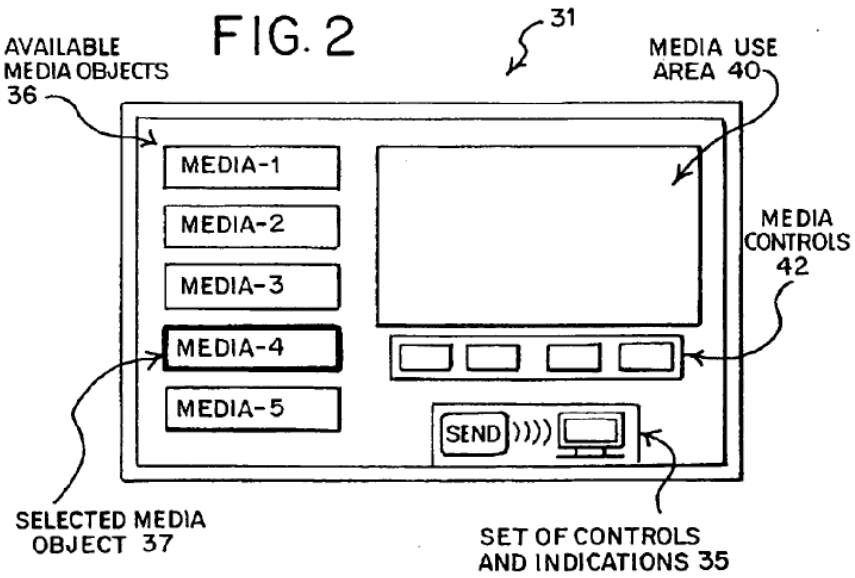

Figure 2 of Al-Shaykh, reproduced above, depicts user interface 31 for the media application of mobile device 11. *Id.* ¶ 85. User interface 31 includes media controls 42 for controlling media-related tasks (*id.* ¶ 88) and set of controls and indications 35 for enabling the user to transfer media content to rendering devices 21, 22, 23 (*id.* ¶ 89).

> [M]obile device 11 may access and/or obtain the media content from a remote content service using a 3G carrier network for use in a media application on the mobile device 11. Then, the mobile device 11 may relay the media content to the target rendering device using the home network 20. In this case, the media content from the remote content service may flow through the

> mobile device 11 if the transfer of the media content is enabled using the set of controls and indications 35.

Id. ¶ 95.

2. Qureshey (Ex. 1008)

Qureshey is titled "Method and Device for an Internet Radio Capable of Obtaining Playlist Content From a Content Server." Ex. 1008, code (54). Qureshey relates to "management and distribution of audio files over a computer network such as the Internet." *Id.* at 1:22–24.

Figure 11 of Qureshey, reproduced below, "is a perspective view of one embodiment of the computing environment of a network-enabled audio device configuration." *Id.* at 5:51–53.

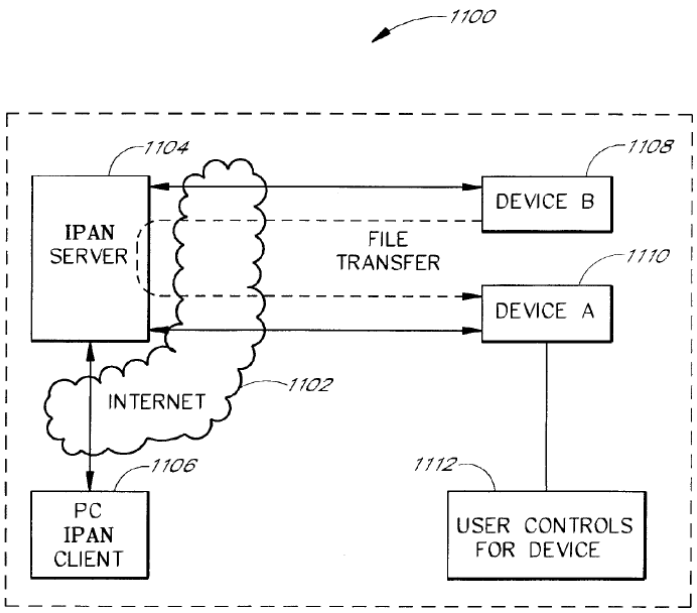

FIG. 11

Figure 11 of Qureshey, reproduced above, depicts Internet Personal Audio Network (IPAN) 1100 including network 1102 (e.g., Internet), IPAN server 1104, personal computer (PC) IPAN client 1106, network-enabled audio device A 1110 with user controls 1112, and network-enabled audio

device B 1108. *Id.* at 16:56–62. IPAN server 1104 maintains playlists, which are lists of audio files and associated URLs specifying where the audio files are retrieved from. *Id.* at 17:4–6, 21:62–65. Device A 1110 connects to IPAN server 1104, which downloads a playlist to device A 1110. *Id.* at 16:67–17:2. Using a Playlist Manager audio player window (not shown), a user can assign a playlist to an audio device. *Id.* at 24:44–53, 28:11–16.

3. Phillips (Ex. 1006)

Phillips is titled "System and Method for Video Display Transfer Between Video Playback Devices." Ex. 1006, code (54). Phillips "relates to transferring display of video content from one device to another." *Id.* at 1:14–15.

Figure 1 of Phillips, reproduced below, "illustrates a system for transferring display of video content between a mobile device and a renderer located proximate to the mobile device according to one embodiment of the present disclosure." *Id.* at 2:8–11.

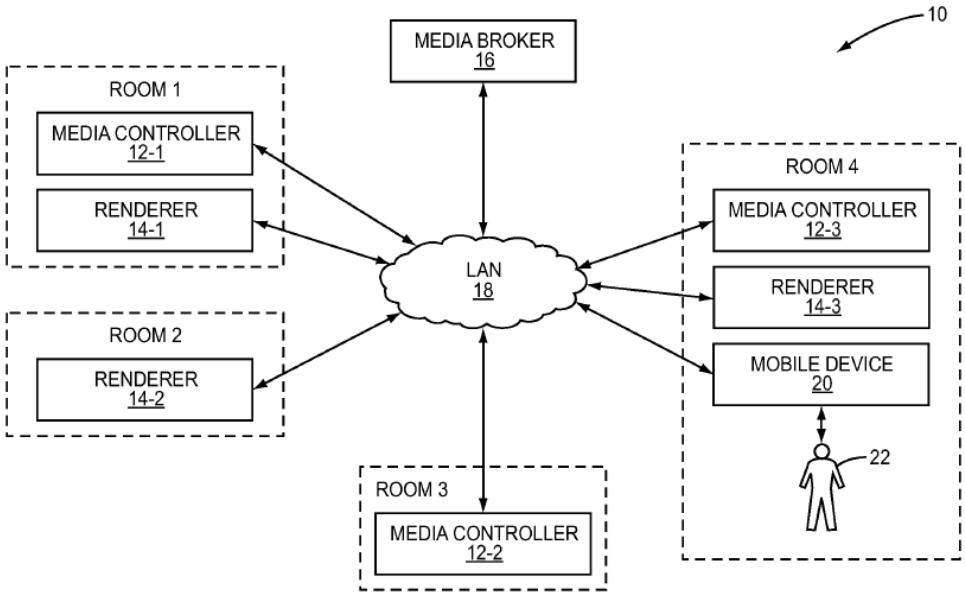

FIG. 1

Figure 1 of Phillips, reproduced above, depicts system 10 including media controllers 12, renderers 14, and media broker 16 connected via Local Area Network (LAN) 18. *Id.* at 2:63–66. Media controllers 12 are sources of video content that are stored locally or accessed remotely from Internet-based streaming video services. *Id.* at 3:18–25. Renderers 14 are devices that provide playback of content from media controllers 12. *Id.* at 3:43–44. Media broker 16 manages transfer of video between mobile device 20 and renderers 14. *Id.* at 4:5–9. User 22 may initiate a transfer of video content using a graphical user interface on mobile device 20. *Id.* at 5:60–66.

4. Ramsay (Ex. 1009)

Ramsay is titled "Systems and Methods for Providing a Media Playback in a Networked Environment." Ex. 1009, code (54). Ramsay discloses a wireless web-enabled portable device interfacing with one or more networked media playback devices without the need for specialized software on the portable device. *Id.* at 1:9–13.

Figure 1 of Ramsay, reproduced below, "shows a networked media system according to one embodiment." *Id.* at 3:34–35.

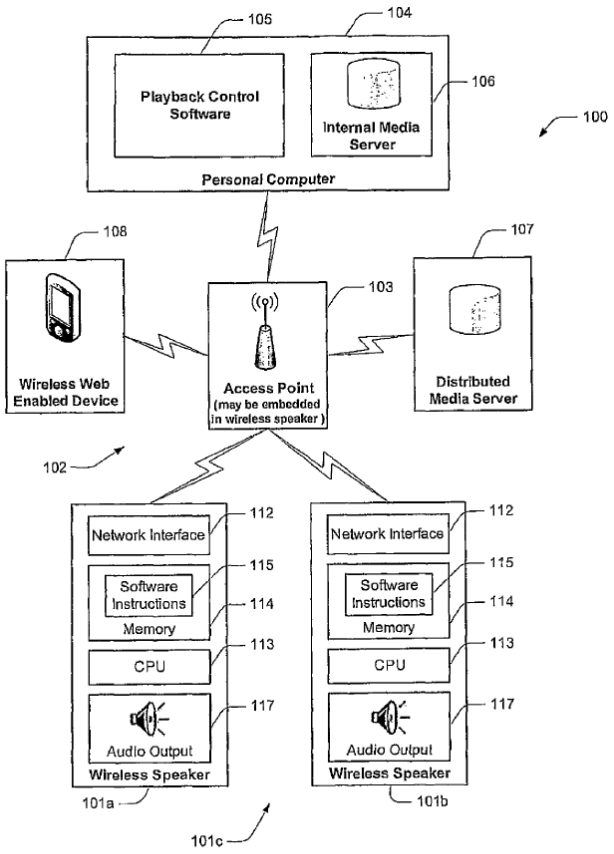

FIG. 1

Figure 1 of Ramsay, reproduced above, depicts digital media playback system 100 including wireless speakers 101*a*, 101*b*, which are connected to wireless network 12 via access point 103 and controllable individually or together as speaker set 101*c*. *Id.* at 4:59–66. Wireless web-enabled device 108 (e.g., Apple iPhone) is used to control individual wireless speakers 101*a*, 101*b* or speaker set 101*c*. *Id.* at 5:25–30.

F. Obviousness Based on Al-Shaykh and Qureshey

We consider the arguments and evidence in the Petition in order to determine if there is a reasonable likelihood that the Petitioner will prevail

with respect to at least 1 of the claims challenged in the Petition. Petitioner contends that claims 1, 6–13, 18–25, and 27–29 of the '615 patent are unpatentable as obvious over the combined teachings of Al-Shaykh and Qureshey. Pet. 13–36, 40–57. As noted above, Patent Owner does not present any arguments or evidence regarding the merits of the Petition as to unpatentability of the challenged claims. *See generally* Prelim. Resp. Accordingly, none of the arguments and evidence in the Petition are at this stage of this proceeding rebutted.

With regard to the combination of Al-Shaykh and Qureshey, the Petition states:

> Al-Shaykh discloses the base media playback system including a mobile control device with a GUI that enables a user to transfer playback to a rendering device and functionality to allow the rendering device to retrieve content for playback from a remote source. Qureshey discloses media playback systems with servers that provide different functionality including a first set of at least one server that adds information to the playback device that identifies the location of multimedia content to be played back and a second set of at least one server that is associated with a content service and stores the content to be played back.

Pet. 13. With regard to combining the relevant teachings of Al-Shaykh and Qureshey, the Petitioner contends that, "[a] POSA [person of skill in the art] would have been motivated to and would have found it obvious to combine Al-Shaykh and Qureshey for several reasons." Pet. 13 (citing Ex. 1003 (Bims Decl.) ¶¶ 71–78). In this regard, the Petition states:

> Al-Shaykh and Qureshey are in the same field of endeavor, deal with similar devices, and are directed to solving the same problems in those devices. Bims, ¶72. . . . [B]oth references enable users to transfer playback to various devices and playback content on those devices from the Internet, which

> provides much greater accessibility to content than traditional systems that were limited to playback of content locally stored on the network. . . .
>
> [B]oth references describe networked media playback systems that include a control device and one or more rendering devices. *See* Bims, ¶73. . . . Thus, Al-Shaykh and Qureshey involve similar media playback systems that are often used in homes or offices and allow users the flexibility of playing content on various device configurations for different scenarios. . . . A POSA would also have been motivated to combine these references to develop an improved GUI for control devices in a multimedia playback network. Bims, ¶73. . . .
>
> Additionally, the references are directed toward solving similar problems. . . .
>
> Based on at least the reasons noted above, Al-Shaykh and Qureshey are analogous art to the '615 patent, and a POSA would have found it obvious to combine them. *In re Clay*, 966 F.2d 656, 659 (Fed. Cir. 1992); Bims, ¶ 78.

Pet. 14–16. Based on this unopposed showing in the Petition, our preliminary, non-binding determination[14] is that a skilled artisan would have been motivated to combine the relevant teachings of Al-Shaykh and Qureshey.

[14] Even where we do not explicitly indicate that our determinations at this stage are preliminary and non-binding, any determination, finding, or conclusion set forth within this document is preliminary and non-binding. We wish to have the record further developed before making any non-preliminary and binding determination, finding, or conclusion other than whether to institute trial.

1. Independent Claim 1[15]

A method comprising:
causing, via a control device, a graphical interface to display a control interface including one or more transport controls to control playback[16] *by the control device;*

Petitioner relies on Al-Shaykh as teaching all the elements of this limitation. Pet. 17–19 (citing Ex. 1003 (Bims Decl.) ¶¶ 79–80; Ex. 1007 ¶¶ 78, 85–88, 92, Figs. 1, 2, 12). Petitioner contends that "Al-Shaykh discloses a "mobile device" with a "user interface 31" that includes various components, including a media controls interface area." *Id.* at 18. In cited paragraph 78, Al-Shaykh teaches that "[t]he mobile device 11 may have a display screen capable of displaying user interface elements and/or visual media content." Ex. 1007 ¶ 78. Petitioner also contends that "the media controls interface area includes 'media controls 42,' which are elements used to 'control rendering of music files on the mobile device 11.'" Pet. 18 (citing Ex. 1007 ¶¶ 78, 88, 92). In cited paragraph 88, Al-Shaykh teaches that, "[t]he media controls 42 may enable the user 12 to control media-related tasks, such as, for example, creation, discovery, selection, organization, management, manipulation and/or rendering of the media content 15." Ex. 1007 ¶ 88. The Petition includes an annotated version of combined Figures 1 and 2 of Al-Shaykh, reproduced below. Pet. 19.

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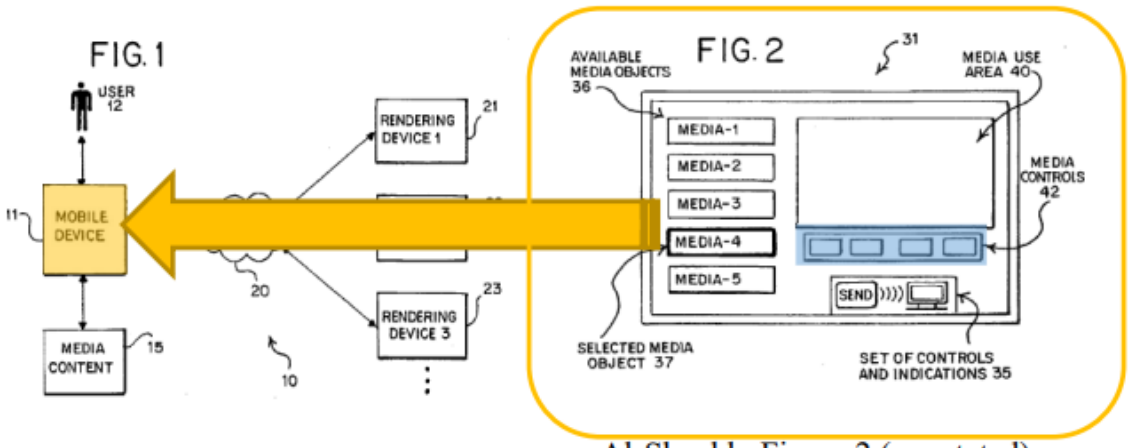
[15] We adopt Petitioner's parsing of claim 1 in order to follow the presentation of the arguments and evidence in the Petition. *See* Pet. 17.
[16] As indicated *supra*, Petitioner and Patent Owner agreed in the district court litigation to construe "one or more transport controls to control playback" as "one or more user input elements, each enabling control of a respective playback-related function." *See* Section II.B. (Claim Construction).



Al-Shaykh, Figure 1 (annotated) Al-Shaykh, Figure 2 (annotated)

Id. Figure 1 depicts "a system for transferring media content from a mobile device to a home network" and Figure 2 depicts "a user interface of a media application having a set of controls and indications." Ex. 1007 ¶¶ 68–69.

The cited passages and figures of Al-Shaykh support Petitioner's argument that all the elements of this limitation are taught by the cited art. Petitioner's undisputed showing as to this limitation is supported and reasonable.

> *after connecting to a local area network via a network interface, identifying, via the control device, playback devices connected to the local area network;*

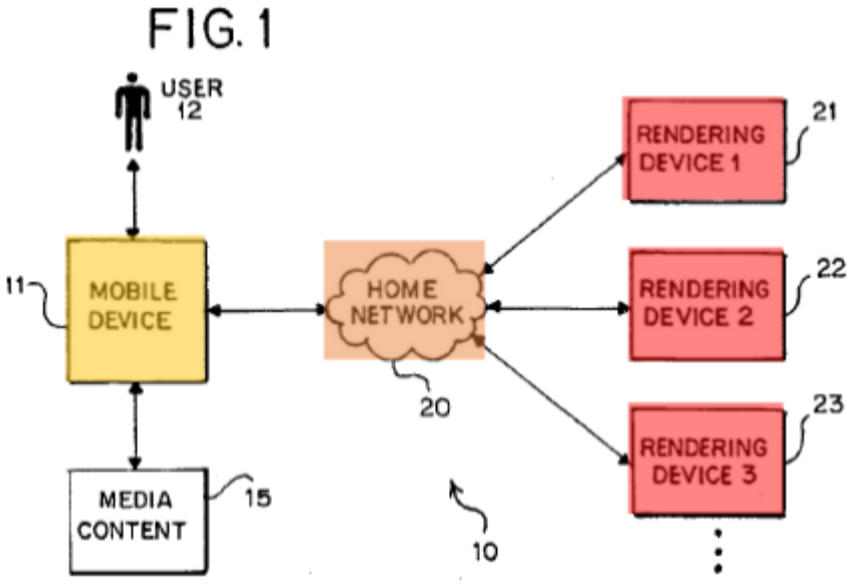
Petitioner relies on Al-Shaykh as teaching all the elements of this limitation. Pet. 19–22 (citing Ex. 1003 (Bims Decl.) ¶¶ 81–85; Ex. 1007 ¶¶ 4, 5, 34, 77, 78, 80–82, 85, 94, 112, 133, 153, Figs. 1, 6). Petitioner contends:

(1) "Al-Shaykh's mobile device connects to a home network 20, such as a 'residential local area network,' in order to 'communicate with one or more available rendering devices'" (*id.* at 19–20 (citing Ex. 1007 ¶ 78, Fig. 1));

(2) "Al-Shaykh discloses communicating using . . . local area network protocols for the home network, so the components of Al-Shaykh's mobile devices providing the interface to those networks are network interfaces" (*id.* at 20 (citing Ex. 1007 ¶¶ 4, 5, 77, 78, 80, 82, 94)); and

(3) "Al-Shaykh's rendering devices include 'televisions[s], … stereo[s], … a gaming console[s], a personal computer[s], a laptop PC[s], [] netbook PC[s], and/or the like,' and, thus, are playback devices because each of these devices are configured to playback content" (*id.* at 21 (citing Ex. 1007, ¶ 81, Fig. 1).

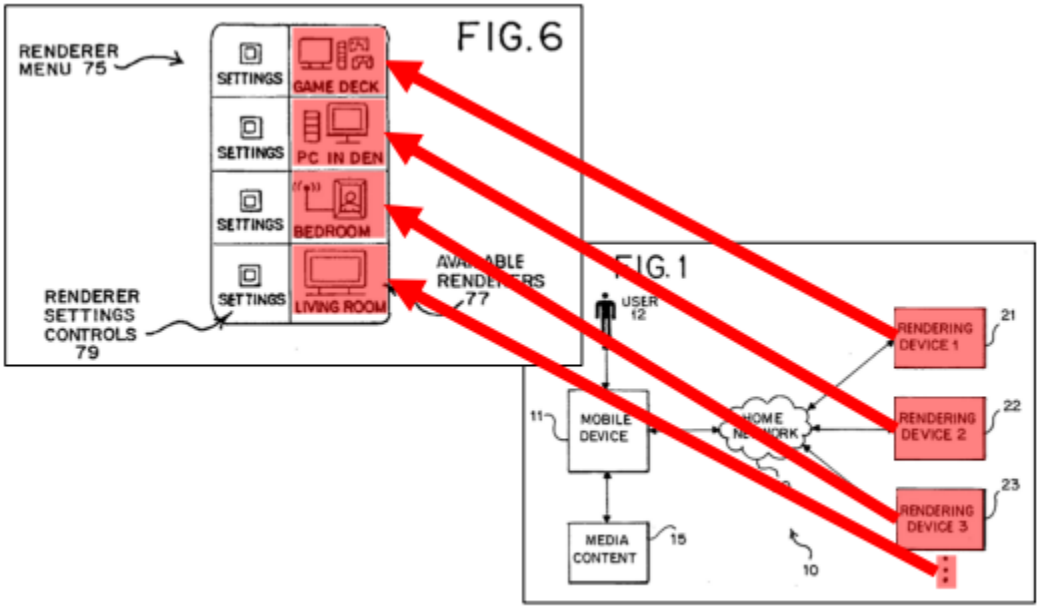
Petitioner provides an annotated Figure 1, reproduced below.



Al-Shaykh, Figure 1 (annotated)

Id. According to Petitioner, annotated Figure 1 depicts "[a]fter connecting to the local area network [home network 20], the mobile device [11] communicates with 'rendering devices 21, 22, 23.'" *Id.* And, the Petition

includes an annotated version of combined Figures 1 and 6 of Al-Shaykh, reproduced below. *Id.* at 22.



Al-Shaykh, Figure 6 (annotated with elements from Figure 1)

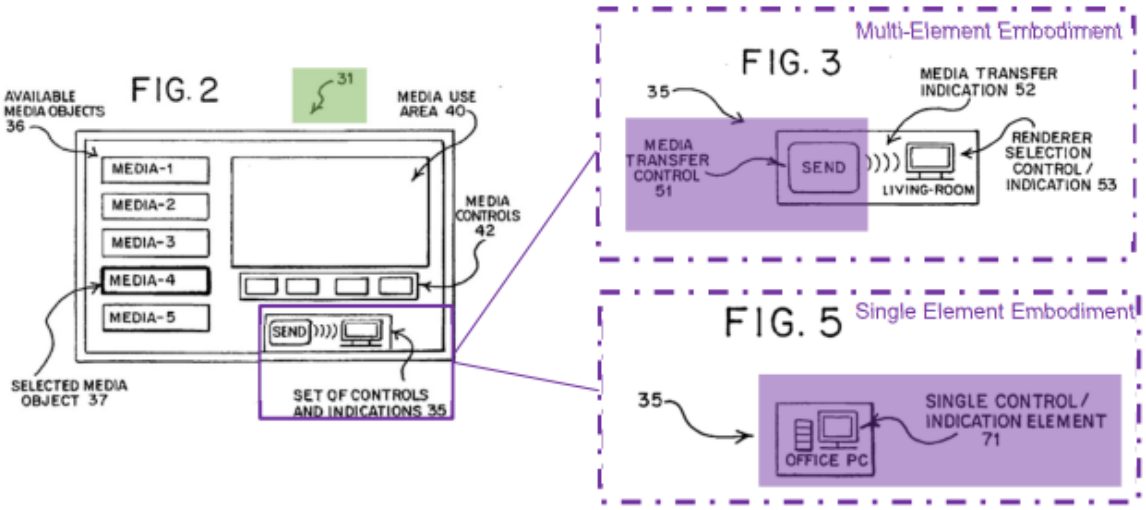
Id. Figure 1 depicts, "a system for transferring media content from a mobile device to a home network" and Figure 6 depicts, "a renderer menu." Ex. 1007 ¶¶ 68,71.

The cited passages and figures of Al-Shaykh support Petitioner's argument that all the elements of this limitation are taught by the cited art. Petitioner's undisputed showing as to this limitation is supported and reasonable.

> *causing, via the control device, the graphical interface to display a selectable option for transferring playback from the control device;*

Petitioner relies on Al-Shaykh as teaching all the elements of this limitation. Pet. 22–24 (citing Ex. 1003 (Bims Decl.) ¶¶ 86–88; Ex. 1007 ¶¶ 89, 100, 115, 120, Figs. 2–5). Petitioner contends: "[t]he 'user interface 31' of Al-Shaykh's mobile device displays a 'set of controls and indications

35 [that] enable the user 12 to enable and/or disable transfer of the media content 15' to a rendering device." *Id.* at 22–23 (citing Ex. 1007 ¶ 89, Fig. 2) (alteration in original). Petitioner provides annotated Figures 2, 3, and 5, reproduced below. *Id.* at 24.



Al-Shaykh, Figures 2, 3, and 5 (annotated)

Id. Annotated Figures 2, 3, and 5 depict, "the mobile device displays media transfer control 51 and control/indication element 71 as selectable options for transferring playback from the control device (i.e., the mobile device) to a rendering device." *Id.* at 23 (citing Ex. 1003 (Bims Decl.) ¶¶86-88).[17]

The cited passages and figures of Al-Shaykh support Petitioner's argument that all the elements of this limitation are taught by the cited art. Petitioner's undisputed showing as to this limitation is supported and reasonable.

[17] In the Petition, certain text is colored. *See, e.g.*, Pet. 23 ("media transfer control 51" and "control/indication element 71" colored purple as in annotated Figures 2, 3, and 5). In quoting the passages in the Petition with colored text, all text coloration outside of the figures in the Petition has been removed.

detecting, via the control device, a set of inputs to transfer playback from the control device to a particular playback device, wherein the set of inputs comprises: (i) a selection of the selectable option for transferring playback from the control device and (ii) a selection of the particular playback device from the identified playback devices connected to the local area network;

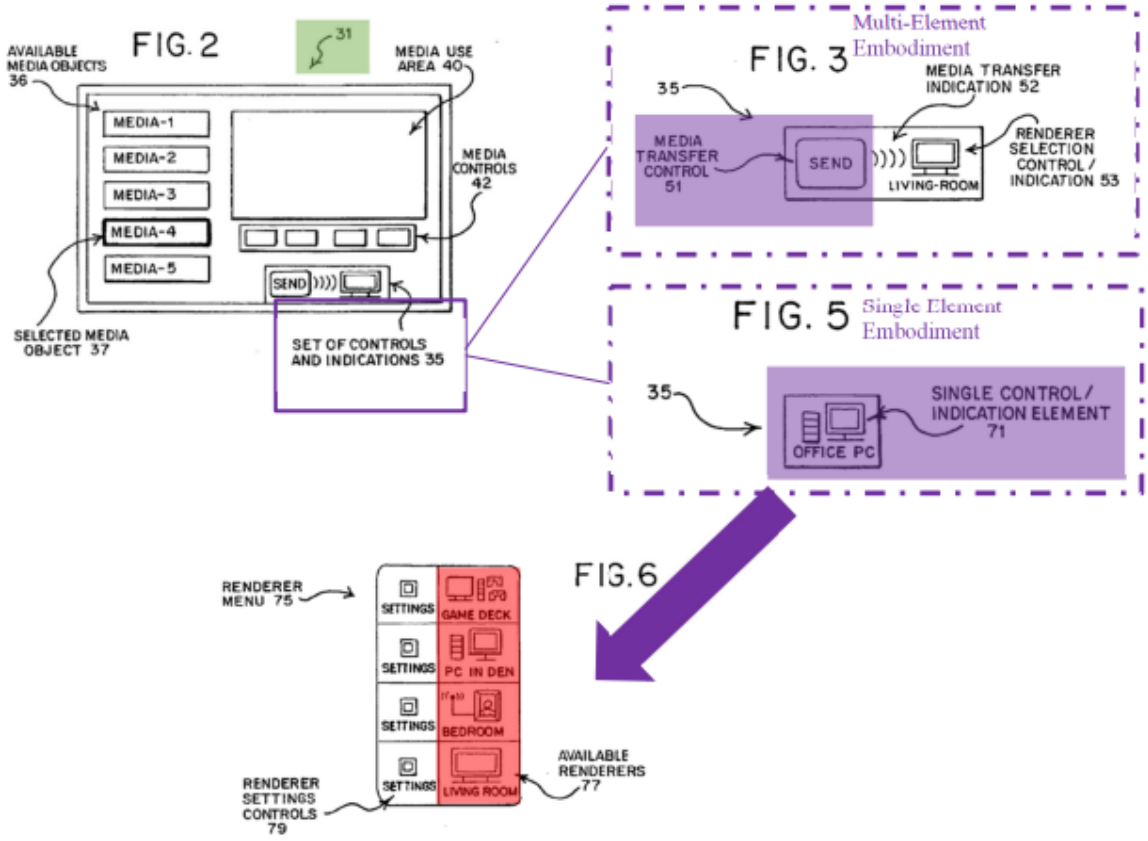
Petitioner relies on Al-Shaykh as teaching all the elements of this limitation. Pet. 24–26 (citing Ex. 1003 (Bims Decl.) ¶¶ 89–92; Ex. 1007 ¶¶ 31, 36, 78, 85, 89, 99, 100, 106, 114, 115, 117, 119–121, 133–139, Figs. 2–6). Petitioner contends:

(1) Al-Shaykh discloses that "a user selects the selectable option (i.e., media transfer control 51 or control/indication element 71) to 'enable and/or disable transfer of the media content 15' to a rendering device" (*id.* at 25 (citing Ex. 1003 ¶ 90);

(2) "[a]fter the media transfer control 51 or control/indication element 71 is selected, the mobile device can display a renderer menu 75 with 'a list 77 of available rendering devices' for a user to select from" (*id.* (citing Ex. 1003 ¶ 91; Ex. 1007 ¶¶ 106, 117, 120, 121, 133); and

(3) "[t]he list enables a user to 'select' a particular rendering device from the list of available rendering devices" (*id.* (citing Ex. 1007 ¶ 133).

Petitioner provides annotated Figures 2, 3, 5, and 6, reproduced below. *Id.* at 26.



Id. Annotated Figures 2, 3, 5, and 6 depict, "in Al-Shaykh's system, a mobile device detects user inputs to transfer playback from the mobile device to a particular rendering device when the user selects the media transfer control 51 or control/indication element 71 followed by a second selection of a particular rendering device from the renderer menu." *Id.* (citing Ex. 1003 ¶ 92).

The cited passages and figures of Al-Shaykh support Petitioner's argument that all the elements of this limitation are taught by the cited art. Petitioner's undisputed showing as to this limitation is supported and reasonable.

> *after detecting the set of inputs to transfer playback from the control device to the particular playback device, causing playback to be transferred from the control device to the*

particular playback device, wherein transferring playback from the control device to the particular playback device comprises:

Petitioner relies on Al-Shaykh as teaching all the elements of this limitation. Pet. 27 (citing Ex. 1003 (Bims Decl.) ¶¶ 93–94; Ex. 1007 ¶¶ 89, 92, 130). Petitioner contends that Al-Shaykh "discloses that, after detecting the set of inputs, the mobile device causes playback to transfer to the target rendering device." *Id.*

The cited passages and figures of Al-Shaykh support Petitioner's argument that all the elements of this limitation are taught by the cited art. Petitioner's undisputed showing as to this limitation is supported and reasonable.

causing one or more first cloud servers to add multimedia content to a local playback queue on the particular playback device, wherein adding the multimedia[18] content to the local playback queue comprises the one or more first cloud servers adding, to the local playback queue, one or more resource locators corresponding to respective locations of the multimedia content at one or more second cloud servers of a streaming content service;

Petitioner relies on Qureshey (in combination with Al-Shaykh) as teaching the elements of this limitation. Pet. 27–34 (citing Ex. 1003 (Bims Decl.) ¶¶ 95–103; Ex. 1008, 3:34–39, 3:46–47, 7:55–58, 13:8–27, 14:32–47, 16:29–32, 16:56–60, 21:62–65, 22:48–58, 24:26–30, 28:11–43, 35:33–67, 37:22–26 (claim 43), Figs. 6B, 11, 15. Petitioner provides a colored version of Figure 6B, reproduced below. *Id.* at 30.

[18] Petitioner relies on Patent Owner's construction of "multimedia" as "includ[ing] audio only content." Pet. 30–31 n.2. Petitioner also contends, "[e]ven if 'multimedia' required content constituting more than one type of media (e.g., audio and video), Al-Shaykh discloses playback of such type of content." *Id.* at 31 n.2 (citing Ex. 1007 ¶¶ 3, 4, 84, 160–167).

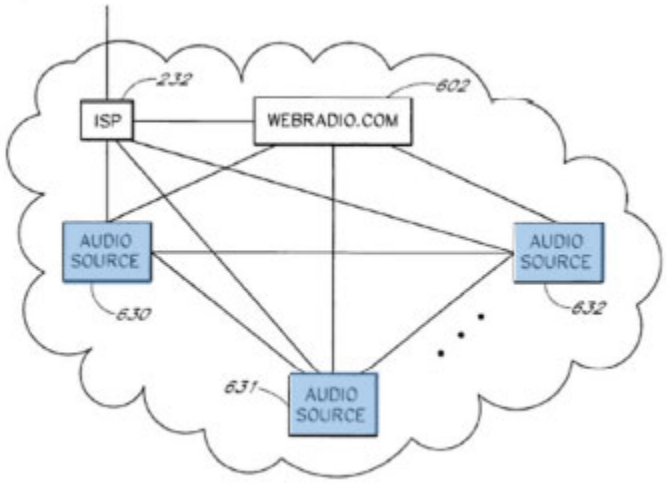


FIG. 6B

Id. Figure 6B depicts the, "relationship between the site 602 and other Web sites that supply streaming audio information, such as a site 630, a site 631, and a site 632." Ex. 1008, 14: 32–34. Petitioner also provides a colored version of Figure 11, reproduced below. *Id.*

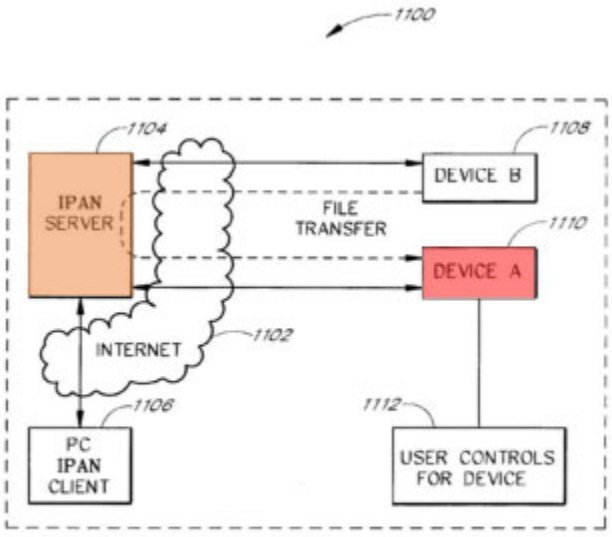


FIG. 11

Id. Figure 11 depicts, "an IPAN [Internet Personal Audio Network] 1100 includes an IPAN server 1104, a PC IPAN client 1106, a network 1102, a device B 1108, a device A 1110, and user controls 1112. The PC IPAN

client 1106 connects to the IPAN Server 1104 through the network 1102 (such as the Internet)." Ex. 1008, 16:56–60. Petitioner further provides a colored version of Figure 15, reproduced below. *Id.* at 28.

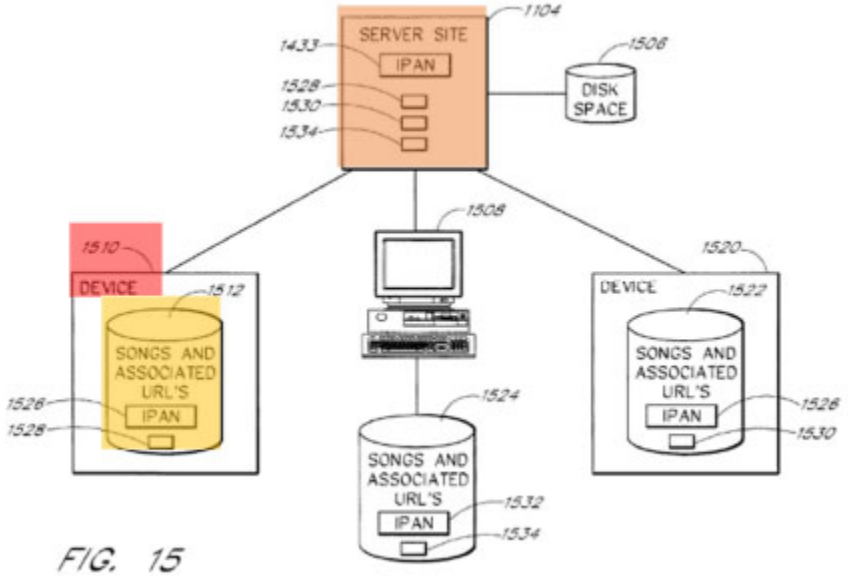


FIG. 15

Id. Fig. 15 depicts, "a configuration for assigning playlists and audio sources to a network-enabled audio device 1510 or other devices such as a PC 1508 from a network-enabled audio device 1520 or another device." Ex. 1008, 21:40–43.

Petitioner contends:

(1) "Qureshey's IPAN server 1104 is a *first cloud server* and Qureshey's audio sources 630-632 constitute *second cloud servers of a streaming content service*. Both the IPAN server 1104 and audio sources 630-632 constitute cloud servers because they are remote computing systems that are accessed over the Internet" (Pet. 28–29 (citing Ex. 1003 ¶ 97; Ex. 1008, 3:34–39, 13:8–27, 14:32–47, 16:29–31, 16:56–60, Figs. 6B, 11, 15));

(2) "Qureshey discloses a synchronization procedure that causes an IPAN cloud server to add an updated playlist to the storage space

1512 of a network-enabled audio device, wherein the updated playlist includes a list of audio files and Uniform Resource Locators (URLs) corresponding to the location of the audio files in the playlist" (*id.* at 30–31) (citing Ex. 1003 ¶ 98; Ex. 1008, 3:46–47, 7:55–58, 14:32–47, 21:62–65, 22:48–58, 24:26–30, 37:22–26, Figs. 6B, 11, 15) (footnote omitted));

(3) "the network-enabled audio device contains a local playback queue that contains a playlist with URLs and a certain list of media (e.g., list of songs for playback) stored within the storage space 1512. The stored URLs are used for retrieval and playback of the certain list of songs in a particular sequence" (*id.* at 31–32) (citing Ex. 1003 ¶¶ 99, 100; Ex. 1008, 21:43-46, 21:62-67, 28:11-43, 35:33-67));

(4) "a POSA would understand that the storage space 1512 containing a playlist with URLs and a certain list of songs includes a local playback queue with URLs used for both retrieving songs and playing them back in a particular sequence, and the list of songs included in the playlist indicates the particular sequence of playback itself. . . . the playlist can store the songs themselves, additionally indicating that Quershey discloses adding multimedia content to a local playback queue" (*id*. at 32) (citing Ex. 1003 ¶¶ 99, 100));

(5) "in the combined Al-Shaykh-Qureshey system, when a set of inputs to transfer playback from the mobile device to the particular rendering device is detected, as disclosed in Al-Shaykh, then the system would cause a first cloud server (i.e.,

Qureshey's IPAN server) to add URLs associated with the locations of the audio files to the storage space 1512 (as disclosed in Qureshey) in Al-Shaykh's rendering devices" (*id.* at 33); and

(6) "a POSA would have been motivated to incorporate the back-end server functionality that enables a rendering device to directly retrieve content from the Internet to play back, as taught by Qureshey, into Al-Shaykh's system, to the extent that Al-Shaykh does not disclose this functionality" (*id.* at 33–34 (citing Ex. 1007 ¶¶ 15, 94, 97; Ex. 1008, 3:34–39, 13:8–27, 14:32–47, 16:29–32, 16:56–60, Figs. 6B, 11, 15)).

The cited passages and figures of Qureshey support Petitioner's argument that all the elements of this limitation are taught by the cited art. Petitioner's undisputed showing as to this limitation is supported and reasonable.

causing playback at the control device to be stopped; and

Petitioner relies on Al-Shaykh as teaching all the elements of this limitation. Pet. 35–36 (citing Ex. 1003 (Bims Decl.) ¶¶ 121–123; Ex. 1007 ¶¶ 53, 93, 100, 156, 157, 166, 167, 173, 174). The Petition states:

> Al-Shaykh discloses the functionality required to stop playback at the mobile device when playback is transferred to the particular rendering device. Specifically, Al-Shaykh discloses transferring playback from an initial rendering device to a new rendering device. Al-Shaykh, [0156-57], [0166- 67], [0173-74]. When transfer occurs, "rendering of the music content on the initial target rendering device may be stopped, and … the rendering of music content on the new target rendering device may begin." Similarly, when rendering from the mobile device is transferred to the target rendering device, the rendering at the mobile device is stopped. *See id.*, [0174], [0157] (the user may transfer playback back from the rendering

> device to the mobile device by invoking the media transfer control 51 or control/indication element 71 a second time). Thus, a POSA would find Al-Shaykh renders obvious that a mobile device stops playback when playback is transferred to the particular rendering device. Bims, ¶ 106.

Id. at 35–36.

The cited passages and figures of Al-Shaykh support Petitioner's argument that all the elements of this limitation are taught by the cited art. Petitioner's undisputed showing as to this limitation is supported and reasonable.

> *modifying the one or more transport controls of the control interface to control playback by the playback device; and*

Petitioner relies on Al-Shaykh as teaching all the elements of this limitation. Pet. 40–41 (citing Ex. 1003 (Bims Decl.) ¶¶ 104–106; Ex. 1007 ¶¶ 53, 93, 100, 156, 157, 166, 167, 173, 174). The Petition states:

> Al-Shaykh further discloses that the same media controls 42 that are configured to control playback of the mobile device are configured to control playback of the rendering device. Al-Shaykh, [0092], [0172], [0013], [0162] . . . A POSA would understand that the media controls on user interface 31 must be modified in order for the same media controls to be configured to control playback in both modes (i.e., a first mode where playback is at the mobile device and a second mode where playback is transferred to the rendering device). Bims, ¶ 123. Specifically, when playback is transferred from the mobile device to the rendering device, the media controls must be modified in order to change the command operation such that use of one of the media controls the operation of the rendering device and not the mobile phone. *Id.*

Id. at 41.

The cited passages and figures of Al-Shaykh support Petitioner's argument that all the elements of this limitation are taught by the cited art.

Petitioner's undisputed showing as to this limitation is supported and reasonable.

> *causing the particular playback device to play back the multimedia content, wherein the particular playback device playing back the multimedia content comprises the particular playback device retrieving the multimedia content from one or more second cloud servers of a streaming content service and playing back the retrieved multimedia content.*

Petitioner contends that both Al-Shaykh and Qureshey teach all the elements of this limitation. Pet. 41–45 (citing Ex. 1003 (Bims Decl.) ¶¶ 124–131; Ex. 1007 ¶¶ 6, 15, 20, 82, 90, 92–95, 97, Fig. 1; Ex. 1008, 2:40–46, 4:62–64, 14:32–47, 21:62–65, 24:17–30, 35:33–36:3, Fig. 6B).

With regard to Al-Shaykh, the Petition states:

(1) "Al-Shaykh discloses 'rendering [] media content on the target rendering device'" (Pet. 42 (citing Ex. 1007 ¶¶ 15, 97) (alteration in original));

(2) "Al-Shaykh discloses a 'remote content service' that provides devices access to stream media content from the internet using, for example, a 'service-specific' or 'media' application. . . . Al-Shaykh further discloses a 'remote content provider' that directly transmits the media content to the devices. . . . Thus, Al-Shaykh's remote content provider transmitting content accessible from a remote content service would constitute a second cloud server of a streaming content service because Al-Shayk's system comprises a remote computing system that is accessed over the Internet" (*id.* at 43 (citing Ex. 1003 ¶ 127; Ex. 1007 ¶¶ 6, 20, 80, 82, 90, 92, 93, 95, Fig. 1)); and

(3) "Al-Shaykh further discloses that the particular rendering device can directly retrieve media content to playback without the media content

originating from or flowing through the mobile device 11" (*id.* at 44 (citing Ex. 1003 ¶ 129; Ex. 1007 ¶¶ 94, 95)).

With regard to Qureshey, the Petition states:

(1) "Qureshey discloses a networked-enabled audio device (also referred to as an electronic device) that retrieves audio content from a remote source and plays it back" (Pet. 44 (citing Ex. 1003, ¶¶ 129–131; Ex. 1008, 2:40–46, 4:62–64, 14:32–47, 35:33-36:3, Fig. 6B)); and

(2) "the networked-enabled audio device stores a playlist that includes URLs that indicate the location of audio files. . . . the remote source that audio files can be retrieved from are audio sources 630-632 that constitute second cloud servers of a streaming content service" (*id.* at 45 (citing Ex. 1008, 21:62-65, 22:48-58, 24:17-30)).

The cited passages and figures of Al-Shaykh and Qureshey support Petitioner's argument that all the elements of this limitation are taught by the cited art. Petitioner's undisputed showing as to this limitation is supported and reasonable.

Summary as to Claim 1

Petitioner has established a reasonable likelihood of showing that claim 1 of the '615 patent would have been obvious in view of the cited references.[19]

[19] Thus, we have determined that there is a reasonable likelihood that the Petitioner will prevail with respect to at least one of the claims challenged in the Petition pursuant to 35 U.S.C. § 314 and that *inter partes* review should be instituted. Accordingly, we institute as to all the challenged claims and all the challenges raised in the Petition. 37 C.F.R. §42.108(a)(" When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.").

2. Claims 6–13, 18–25, and 27–29

Petitioner also provides a detailed showing that 6–13, 18–25, and 27–29 of the '615 patent are unpatentable as obvious over the combined teachings of Al-Shaykh and Qureshey. Pet. 45–57. As noted previously, Patent Owner does not address the merits of any portion of the Petitioner's obviousness showing. *See generally* Prelim. Resp. Thus, at this stage, Petitioner's obviousness showing as to claims 6–13, 18–25, and 27–29 is not rebutted.

Based on our review of the Petition, we determine that Petitioner has established a reasonable likelihood of showing that claims 6–13, 18–25, and 27–29 of the '615 patent would have been obvious in view of the cited references.

G. Obviousness Based on Al-Shaykh, Qureshey, and Phillips

Petitioner contends that claims 1, 6–13, 18–25, and 27–29 of the '615 patent are unpatentable as obvious over the combined teachings of Al-Shaykh, Qureshey, and Phillips. Pet. 36–57. Petitioner's showing that the challenged claims are unpatentable over these cited references at least at this stage of this proceeding is not rebutted in any aspect. *See generally* Prelim. Resp. Based on our review of the Petition, we determine that Petitioner has established a reasonable likelihood of showing that claims 1, 6–13, 18–25, and 27–29 of the '615 patent would have been obvious in view of the cited references.

H. Obviousness Based on Al-Shaykh, Qureshey, and Ramsay

Petitioner contends that dependent claims 2 and 14 of the '615 patent are unpatentable as obvious over the combined teachings of Al-Shaykh, Qureshey, and Ramsay. Pet. 57–69. Petitioner's showing that the

challenged claims are unpatentable over these cited references at least at this stage of this proceeding is not rebutted in any aspect. *See generally* Prelim. Resp. Based on our review of the Petition, we determine that Petitioner has established a reasonable likelihood of showing that claims 2 and 14 of the '615 patent would have been obvious in view of the cited references.

I. Obviousness Based on Al-Shaykh, Qureshey, Phillips and Ramsay

Petitioner contends that dependent claims 2 and 14 of the '615 patent are unpatentable as obvious over the combined teachings of Al-Shaykh, Qureshey, Phillips, and Ramsay. Pet. 57–69. Petitioner's showing that the challenged claims are unpatentable over these cited references at least at this stage of this proceeding is not rebutted in any aspect. *See generally* Prelim. Resp. Based on our review of the Petition, we determine that Petitioner has established a reasonable likelihood of showing that claims 2 and 14 of the '615 patent would have been obvious in view of the cited references.

III. CONCLUSION

For the reasons discussed above, we determine that Petitioner has demonstrated a reasonable likelihood of showing at least one of the claims challenged in the Petition would have been obvious.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of the '615 patent is instituted with respect to the challenged claims and the grounds set forth in the Petition; and

FURTHER ORDERED pursuant to 35 U.S.C. § 314(a) and 37 C.F.R. § 42.4(b), *inter partes* review of the '615 patent shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

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Paper 15
Date: April 12, 2022

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

SONOS, INC.,
Patent Owner.

IPR2021-01563
Patent 9,967,615 B2

Before MICHAEL R. ZECHER, TERRENCE W. McMILLIN, and GARTH D. BAER, *Administrative Patent Judges*.

McMILLIN, *Administrative Patent Judge*.

SCHEDULING ORDER

Petitioner's reply (earlier or later, but no later than DUE DATE 3 for Patent Owner's sur-reply) and the portion of DUE DATE 3 related to Patent Owner's sur-reply (earlier or later, but no later than DUE DATE 7). The parties may not stipulate to a different date for the portion of DUE DATE 2 related to Petitioner's opposition to a motion to amend, or for the portion of DUE DATE 3 related to Patent Owner's reply to an opposition to a motion to amend (or Patent Owner's revised motion to amend) without prior authorization from the Board. In stipulating to move any due dates in the scheduling order, the parties must be cognizant that the Board requires four weeks after the filing of an opposition to the motion to amend (or the due date for the opposition, if none is filed) for the Board to issue its preliminary guidance, if requested by Patent Owner. A notice of the stipulation, specifically identifying the changed due dates, must be promptly filed. The parties may not stipulate an extension of DUE DATES 4, 7, and 8.

In stipulating different times, the parties should consider the effect of the stipulation on times to object to evidence (37 C.F.R. § 42.64(b)(1)), to supplement evidence (§ 42.64(b)(2)), to conduct cross-examination (§ 42.53(d)(2)), and to draft papers depending on the evidence and cross-examination testimony.

1. DUE DATE 1

Patent Owner may file—

a. A response to the petition (37 C.F.R. § 42.120). If Patent Owner elects not to file a response, Patent Owner must arrange a conference call with the parties and the Board. Patent Owner is cautioned that any arguments not raised in the response may be deemed waived.

b. A motion to amend the patent (37 C.F.R. § 42.121).

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner

v.

SONOS, INC.,
Patent Owner

U.S. Patent No. 9,967,615

Inter Partes Review Case No.: IPR2021-01563

PATENT OWNER RESPONSE TO PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 9,967,615

Pursuant to 37 CFR § 42.120(a), Patent Owner submits the following Patent Owner Response to the petition.

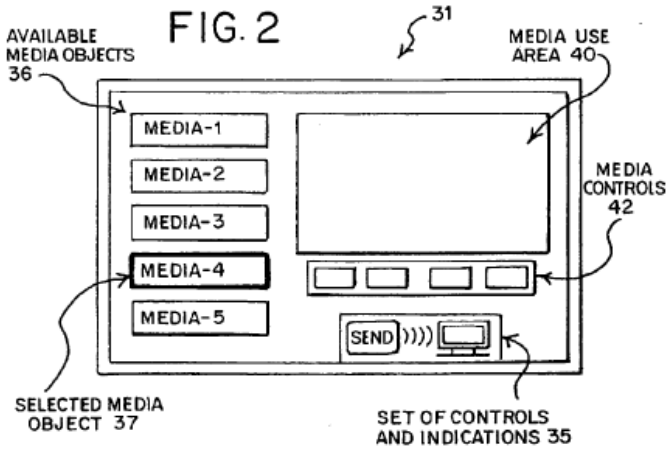
II. OVERVIEW OF ALLEGED PRIOR ART

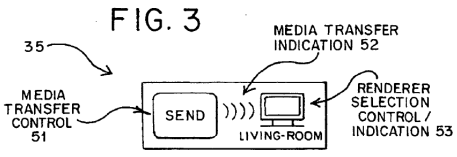
A. Al-Shaykh

Al-Shaykh discloses techniques for "transferring media content" from a "mobile device" to "rendering devices" in a "home network," such as a "residential local area network." Ex.1007, ¶¶2, 14, 78. As background, Al-Shaykh discloses "[t]hree well-known approaches [to] share media content from a mobile device to a home network" and discusses various limitations thereof. *Id*., ¶¶7-13.

To address these limitations, Al-Shaykh discloses techniques for "transferring media content" from a "mobile device" to "rendering devices" in a "home network," where "a media transfer control, a media transfer indication and a renderer selection control/indication" are displayed "concurrently" in the "user interface of the mobile device." *Id.*, ¶14.

To illustrate, FIG. 2 discloses "user interface 31" of a media application on "mobile device 11" allowing a user to "enable and/or disable transfer" of "media content" from the "media application to a target rendering device" using the "set of controls and indications 35." *Id.*, ¶¶85, 89. Al-Shaykh's FIG. 3 illustrates the "set of controls and indications." *Id.*, ¶99; *see also* FIGs 4-5.





In practice, Al-Shaykh discloses that a user "may enable transfer of the media content to a target rendering device … ***when the media application*** [of the mobile device] ***has the internal state set to 'PAUSE.'***" *Id.*, ¶132. In response, Al-Shaykh discloses that "the media application may change the internal state from 'PAUSE' to 'PLAY,'" and "[a]s a result, the media application may begin and/or may resume rendering of the media content on the mobile device 11 substantially simultaneously with the transfer to and/or the rendering of the media content on the target rendering device." *Id.*

Al-Shaykh discloses three different approaches in which the "mobile device" transfers "media content" to a "target rendering device" with the vast majority of Al-Shaykh's disclosure focusing on the first and second approaches.

In the first approach, Al-Shaykh discloses, "[i]f the 'media in context' in the media application is locally stored on the mobile device 11, the media content may be transferred from the mobile device 11 to the target rendering device using the

home network 20." *Id.*, ¶95; *see also id.*, ¶19.

In the second approach, Al-Shaykh discloses that a "remote content provider transmits the… media content to the mobile device… and the mobile device transmits [that] media content to the… target rendering device using the home network…." *Id.*, ¶20. In this regard, the "mobile device" relays the "media content" directly to the "target rendering device." *See id.*, ¶95 ("[M]obile device 11 may ***relay*** the media content to the target rendering device using the home network 20," such that "the media content from the remote content service may flow through the mobile device 11….").

In the third approach, Al-Shaykh's "mobile device 11 may access the media content stored on a media server in the home network 20," and then "the mobile device 11 may instruct the target rendering device to obtain the media content directly from the media server in the home network 20 …." *Id.*, ¶96. In this respect, Al-Shaykh's "mobile device" facilitates the retrieval of "media content" from a local "media server" in the "home network 20" to "the target render device" without the need for a "remote content service." *Id.*; *see also id.*, ¶78 (describing "home network 20" as "a residential ***local area*** network"), ¶80.

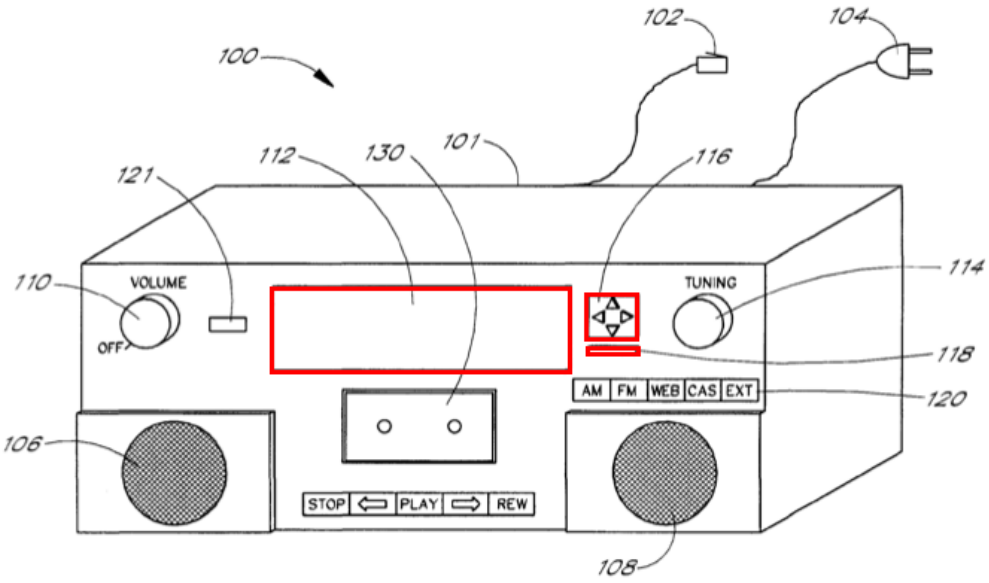
B. Qureshey

Qureshey "relates to the field of audio file transfers and … distribution of audio files over a computer network such as the Internet." Ex.1008, 1:21-24;

FIG.11. In this respect, Qureshey discloses an "intelligent radio device" that can operate in two different "modes of operation." *Id.*, 10:49-50, 16:29-36, cl. 1.

In a first "Web Radio mode," Qureshey discloses an "intelligent radio device" with particular "hardware and software" that can "receive digitized audio from the Web ***without the need*** for a personal computer or other expensive equipment." *Id.*, 7:28-33, 10:49-50.

As annotated below, the intelligent radio includes a "display device 112" and "user controls" 116, 118 that are "used to select a Web broadcast and provide information about the selected Web broadcast." *Id.*, 10:58-63, FIG 1:



After a user identifies and selects a given Web broadcast using the intelligent radio's "user controls" and "display device," the intelligent radio "receives the Web broadcast" over the Internet. *Id.*, 12:60-64, 13:8-14.

In a second, different mode of operation ("playlist mode"), Qureshey discloses an "intelligent radio" in the form of a "network-enabled audio device" "configured for use ***with other electronic devices***." *Id.*, 16:29-34, cl. 1. In particular, "software on a PC can be used to assign playlists of songs to the network-enabled audio device." *Id.*, 16:34-36. FIG. 11 illustrates how a playlist is assigned to a "network-enabled audio device":

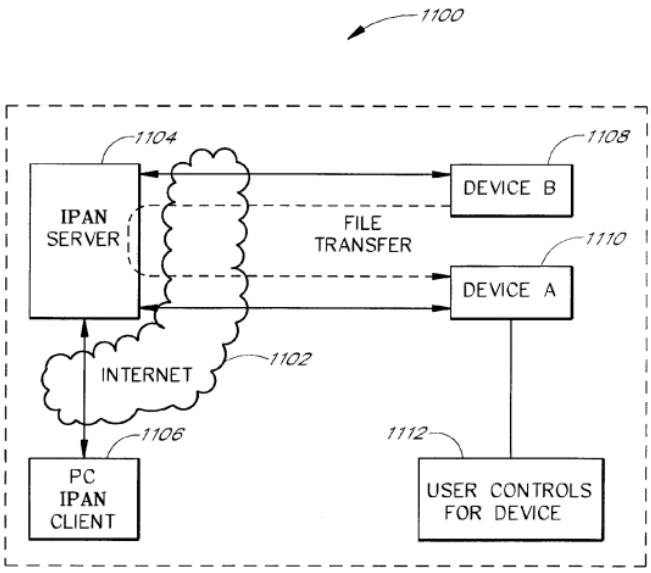


FIG. 11

As shown, playlists are assigned via an Internet Personal Audio Network ("IPAN 1100") that includes an "IPAN server," a "PC IPAN client," and network-enabled audio devices ("device B" and "device A"). *Id.*, 16:56-62. Each of these entities is installed with special "IPAN software" that is used for assigning playlists. *Id.*, 20:61-63, 21:43-46, 21:50-53, 22:36-42, FIG. 15.

To illustrate the functionality of this special "IPAN software," FIG. 17C

provides an example display "provided by the PC IPAN client software 1532 and the server site IPAN software 1433," where "[t]he user can choose the menu option of 'Make Available On' to assign the playlist from one device to another[.]" *Id.*, 23:28-30, 24:50-57.

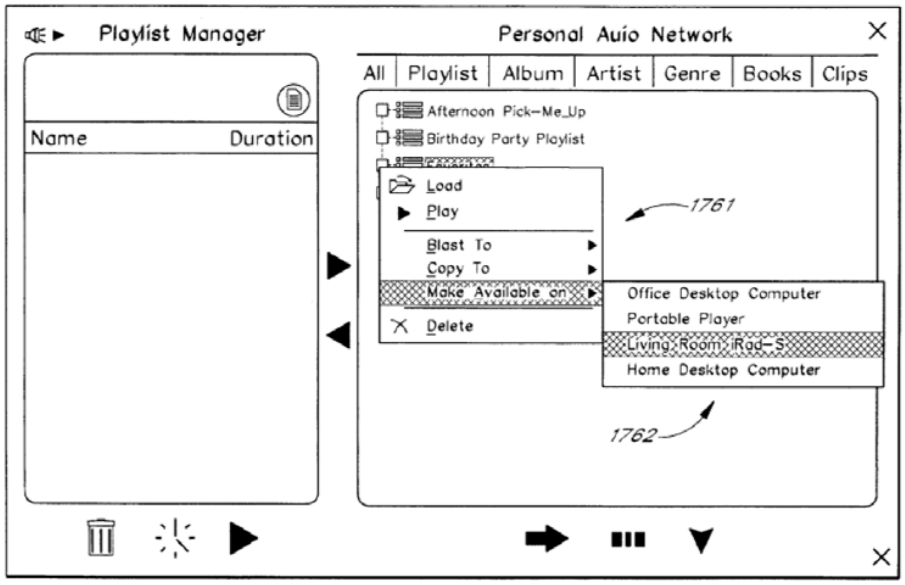


FIG. 17C

After a given playlist has been assigned to a particular audio device, Qureshey's special "IPAN software" enables a user to "download" the audio files in the given playlist to the audio device. *Id.*, 17:1-2, 17:17-31, 22:47-53. Subsequently, as shown in FIG. 18D, if a user wishes to playback the given playlist on the particular audio device, the user must utilize that audio device's integrated user controls to select the given playlist. *Id.*, 26:20-33, 26:63-27:15.

VI. THE CHALLENGED CLAIMS ARE PATENTABLE

A. Independent Claims 1, 13, and 25 (Grounds I-II)

Google fails to establish that Grounds I-II render claims 1, 13, and 25 unpatentable for at least the reasons below.

1. Ground I: No Motivation to Combine Al-Shaykh and Qureshey

A POSA would not have been motivated to combine Al-Shaykh and Qureshey for several reasons.

First, Google's high-level reasons – including that they are "in the same field of endeavor," "deal with similar devices," and are directed to solving the "same" or "similar" problems (Petition, 14-16) – are simply much too generic and conclusory and evidence Google's impermissible hindsight bias. *Purdue Pharma L.P. v. Depomed, Inc.*, 643 F.App'x 960, 966 (Fed. Cir. 2016) (finding general opinions "on the interrelated teachings of [] references" insufficient); *ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc.*, 694 F.3d 1312, 1328 (Fed. Cir. 2012) (finding "generic" expert opinions that "bear[] no relation to any specific combination of prior art elements" insufficient); Ex.2018, ¶139.

This hindsight bias is exemplified by the fact that Al-Shaykh already worked for its intended purpose (i.e., to transfer content) –albeit in three different manners, each of which is different from what is claimed by the '615 Patent and address a different problem than that addressed by the '615 Patent– and Google fails to identify

anything about the nature of the particular problem being solved in Al-Shaykh, or anything else in the teachings of Al-Shaykh or Qureshey demonstrating a deficiency or need in Al-Shaykh, that evidences a motivating reason for a POSA in 2011 to have modified Al-Shaykh's already-working system. *Id.* Instead, Google relies solely on the conclusory opinions of its expert –a practice that violates Federal Circuit precedent. *TQ Delta, LLC v. CISCO Sys., Inc.*, 942 F.3d 1352, 1359 (Fed.Cir. 2019) ("[Federal Circuit]'s opinions have repeatedly recognized that conclusory expert testimony ***is inadequate*** to support an obviousness determination").

In this regard, Google fails to justify why a POSA would have been motivated to undertake an extensive effort to modify Al-Shaykh with fundamentally different and inconsistent teachings from Qureshey in the manner Google believes would render the Challenged Claims obvious. Ex.2018, ¶140. Instead, as discussed later, Google improperly uses the invention of the '615 Patent as a roadmap to find isolated teachings from Qureshey to incorporate into Al-Shaykh to allegedly achieve the Challenged Claims. *TQ Delta*, 942 F.3d at 1361 ("[A]llowing the challenger to use the challenged patent as a roadmap to reconstruct the claimed invention using disparate elements from the prior art" is the type of "impermissible *ex post* reasoning and hindsight bias that *KSR* warned against."); Ex.2018, ¶140.

Second, Al-Shaykh expressly ***teaches away*** from several aspects of well-known systems like Qureshey's system and proposes a different solution that

addresses the drawbacks of such systems. *Id.*, ¶141. A POSA would have found Al-Shaykh and Qureshey incompatible and thus, would have been discouraged from seeking out Qureshey's teachings to modify Al-Shaykh for several reasons. *Id.*

For example, Al-Shaykh ***teaches away*** from the "mobile-device-as-server" approach, where "the mobile device acts as a media server" for "other devices using the home network" because this approach "does not allow the user to control the rendering using the media functions, the applications or the user interface available on the mobile device." Ex.1007, ¶8. Qureshey utilizes this "mobile-device-as-server" approach that Al-Shaykh denigrates. Ex.2018, ¶142. Indeed, a "PC IPAN client" in Qureshey merely acts as a media server to make media content (i.e., "playlists of songs") available to "network-enabled audio devices" and does not allow a user to control the rendering of media content using the "PC IPAN client." *Id*., ¶¶142-43. Instead, a user must use the audio device's user interface to manually control its playback. *Id*., ¶143. Because Qureshey utilizes the very type of well-known approach that Al-Shaykh disparages, a POSA would have been discouraged from seeking out Qureshey to modify Al-Shaykh. *Id*.

As another example, Qureshey requires a special "IPAN software" installed on each device in the IPAN network to "assign playlists of songs" – the exact type of "sharing application" approach that Al-Shaykh also ***teaches away*** from. *Id*., ¶144; Ex.1007, ¶9. Al-Shaykh discloses that this well-known approach limits the user to

a special "sharing application" that cannot use the "features of the various other media functions and applications which are available on the mobile device," and requires the user to "invest additional time and effort to learn and become familiar with the different user interface of the separate sharing application." *Id.* Because Qureshey implements another one of the well-known approaches that Al-Shaykh characterizes as "***not ideal*** for the user" (*id*.), a POSA would have been discouraged from seeking out Qureshey to modify Al-Shaykh. Ex.2018, ¶144.

As yet another example, a POSA would have been further discouraged from seeking out Qureshey to modify Al-Shaykh because the user control to assign a playlist in Qureshey is hidden in the "menu option" –another approach that Al-Shaykh ***teaches away*** from. *Id*., ¶145; Ex.1007, ¶12. Al-Shaykh favors a different approach of "displaying a media transfer indication and a render selection control/indication concurrently in the user interface of the mobile device…." *Id.*, ¶15. Because Qureshey uses yet another one of the well-known approaches that Al-Shaykh disparages, a POSA would have been discouraged from seeking out Qureshey to modify Al-Shaykh. Ex.2018, ¶145.

Third, Google's contention that Al-Shaykh and Qureshey disclose "media playback systems [that] provide a cheaper option" (Petition, 16) is not a legitimate reason why a POSA would have been motivated to combine Al-Shaykh with Qureshey. *ActiveVideo*, 694 F.3d at 1328 (finding expert opinions that motivation

existed because "you wanted to build something better," "more efficient," "cheaper," and with "more features" insufficient); Ex.2018, ¶146. Even if Google's contention was true, Google provides no explanation as to how and/or why modifying Al-Shaykh with Qureshey would provide a "cheaper option" than Al-Shaykh alone. To the contrary, modifying Al-Shaykh with Qureshey by adding additional hardware components and functionality (e.g., hardware and functionality of Qureshey's remote "IPAN server") would have introduced additional complexity and thus, cost to Al-Shaykh. *Id.* Combining Al-Shaykh with Qureshey would simply not have provided a "cheaper option" than Al-Shaykh alone. *Id.*

Fourth, Google generically contends that "a POSA would also have been motivated to combine these references to develop an improved GUI…." Petition, 15. Aside from being woefully too generic (*ActiveVideo*, 694 F.3d at 1328), Google fails to identify anything demonstrating a deficiency or need with either Al-Shaykh or Qureshey's disclosed GUI that would have prompted a POSA to develop an improved GUI. Ex.2018, ¶147. Moreover, Google does not explain how combining Al-Shaykh and Qureshey results in an "improved GUI" or how such an alleged improvement is relevant to the Challenged Claims. *Id.*; *ActiveVideo*, 694 F.3d at 1328 (finding "generic" expert opinions that "bear[] no relation to any specific combination of prior art elements" insufficient).

Fifth, Dr. Bims generally contends that "the motivation that led to the

development of the '615 Patent would have been the same motivation used by a POSA to combine Al-Shayk[h] and Qureshey to achieve the same goal." Ex.1003, ¶77. However, it is improper hindsight to use the '615 Patent's motivations that are not derived directly from the prior art as a basis for obviousness. *Purdue*, 643 F.App'x at 966 ("[T]o the extent that [Petitioner] relies on the problem to be solved to supply the reason to combine the prior art, it failed to demonstrate to the Board that the problem was known in the art or that [Petitioner's] formulation of the problem was ***derived directly*** from the prior art, ***rather than*** from the challenged claims."); *Mintz v. Dietz & Watson, Inc.*, 679 F.3d 1372, 1377 (Fed. Cir. 2012). Thus, Google and Dr. Bims' reliance on the '615 Patent's motivations is misplaced.

For at least the foregoing reasons, a POSA would not have been motivated to combine Al-Shaykh with Qureshey in the manner Google proposes. Ex.2018, ¶151.

2. Ground I: The "Transferring Playback"/"Transfer Playback" Aspects of Limitation 1-c, 1-d, 1-e

Google contends that Al-Shaykh teaches limitations 1-c, 1-d, and 1-e (Petition, 22-27) but fails to establish that Al-Shaykh teaches these limitations at least because Al-Shaykh fails to teach the "transferring ***playback***"/"transfer ***playback***" limitations of 1-c, 1-d, and 1-e.

As explained, a POSA would have understood from the plain language of claim 1 that the "control device" has to be capable of being in a playback state when it "detect[s] a set of inputs to transfer playback" and after such detecting, "caus[e]

Shaykh's "mobile device" does not "transfer playback" to the "target rendering device" but instead, the "mobile device" causes the "rendering device" to begin rendering a transferred media file and causes itself to begin or resume rendering that same media file "substantially simultaneously" with the transfer or with the rendering by the "target rendering device." Ex.2018, ¶162.

For at least these reasons, Google fails to establish that Al-Shaykh teaches limitations 1-c, 1-d, and 1-e.

3. Ground I: Limitation 1-f

Google relies entirely on Qureshey for limitation 1-f. Petition, 27. However, Google fails to establish that Al-Shaykh and Qureshey combined render this limitation obvious for various reasons.

a. No Motivation to Combine for Limitation 1-f

As explained, Google's high-level contentions fail to establish a sufficient motivating reason to combine Al-Shaykh and Qureshey. *Supra* §VI.A.1.

For limitation 1-f, Google further contends that "Al-Shaykh's rendering devices would incorporate Qureshey's storage space 1512 within a networked-enabled device and Al-Shaykh's system would incorporate Qureshey's first cloud server (i.e., the IPAN server)." Petition, 33. However, Google again provides no legitimate reason why a POSA would have been motivated in 2011 to modify Al-Shaykh in the manner proposed. Indeed, Google's assertions about merely

combining Al-Shaykh and Qureshey (which would not even achieve the Challenged Claims) amounts to nothing more than conjecture as to what a POSA ***could have*** done but falls woefully short of establishing that a POSA ***would have*** been motivated to modify Al-Shaykh, much less in a manner to achieve the Challenged Claims. *Personal Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 993-94 (Fed. Cir. 2017); Ex.2018, ¶169.

Moreover, Google's assertion that "a POSA would have been motivated to incorporate the back-end server functionality that enables a rendering device to directly retrieve content from the Internet to play back, as taught by Qureshey, into Al-Shaykh's system" (Petition, 33-34) is based on a false premise that "Al-Shaykh's rendering devices can ***directly retrieve*** media content ***from a remote server*** for playback…." *Id*., 34.

To the contrary, Al-Shaykh discloses (i) a "mobile device" (not a "rendering device") can receive media content from a "remote content provider"/"remote content service" and may "***relay*** the media content" to a "rendering device using the home network 20" (Ex.1007, ¶¶20, 93-95) and (ii) a "rendering device" may "obtain the media content directly from ***the media server in the home network 20***" (*id.*, ¶96), which a POSA would readily understand is not a "remote server," as Google asserts Ex.2018, ¶171. Because Google's contention is based on this false premise, Google's assertion that "a POSA would have looked to similar references in the art

for further disclosures of networked playback systems to determine how playback devices within the systems are able to directly retrieve content from remote sources" (Petition, 34) is fatally flawed.

Setting aside Google's false premise, Google still contends that "a POSA would have been motivated to implement Qureshey's back-end server functionality to improve the system by preventing any disconnection or failure of a mobile control device to impact ongoing playback on the rendering device." Petition, 34. However, for various reasons, Google fails to identify any sufficient motivating reason for a POSA in 2011 to have implemented "Qureshey's back-end server functionality" into Al-Shaykh.

First, a POSA would have understood that modifying Al-Shaykh with Qureshey in the manner proposed would have fundamentally altered Al-Shaykh's principles of operation, which indicates a POSA would not have been motivated to make such a modification. *Plas-Pak Indus., Inc. v. Sulzer Mixpac AG*, 600 F.App'x 755, 759 (Fed. Cir. 2015) ("[A] change in a reference's 'principle of operation' is unlikely to motivate a person of ordinary skill to pursue a combination with that reference."); Ex.2018, ¶173. In particular, Google suggests that a POSA would have modified Al-Shaykh by adding Qureshey's "IPAN server." Petition, 28-30, 33-34. However, adding Qureshey's "IPAN server" to Al-Shaykh would have fundamentally changed how Al-Shaykh's "mobile device" transferred "media

content" to a "rendering device," which already worked for its intended purpose –in ***three*** different manners than what is claimed by the '615 Patent. Ex.2018, ¶173.

Specifically, as explained, Al-Shaykh discloses ***three*** approaches in which a "mobile device" transfers "media content" to a "target rendering device." *Supra* §VI.A.2. As a recap, in the first and second approaches, Al-Shaykh's "mobile device" acts as a local media server that either (i) sources locally-stored media content to a "target rendering device" or (ii) receives "media content" from a "remote content service" and then relays the "media content" to a "target rendering device." *Id.* With respect to these approaches, a POSA would have understood that adding Qureshey's cloud "IPAN server" to Al-Shaykh would have fundamentally changed how Al-Shaykh retrieves "media content" and transfers that "media content" to a "target rendering device." Ex.2018, ¶174. A POSA would not have been motivated to add Qureshey's "back-end server functionality" to these approaches that were purposely intended for using a "mobile device" as a local media server, as that would have required a POSA to alter Al-Shaykh's principles of operation. *Id.*

In the third approach, Al-Shaykh's "mobile device 11 may instruct the target rendering device to obtain the media content directly from ***the media server in the home network*** …." Ex.1007, ¶96. Thus, Al-Shaykh's "mobile device" facilitates the "rendering device" retrieving "media content" from a ***local*** "media server" in the "home network" without the need for a "remote content service." Ex.2018, ¶175.

However, with respect to this approach, a POSA would have understood that adding Qureshey's ***cloud*** "IPAN server" to Al-Shaykh—which already worked for its intended purpose by retrieving "media content" from a ***local*** "media server" in the "home network"—would have fundamentally changed how Al-Shaykh's "mobile device" facilitates the transfer of "media content" to the "target rendering device." Ex.2018, ¶175. Simply put, with Al-Shaykh's "media server in the home network" approach, there is no need for the claimed functionality of limitations 1-f or 1-i, and a POSA in 2011 would not have been motivated to fundamentally alter the principles of operation of Al-Shaykh to incorporate this functionality. *Id.*

In fact, because Al-Shaykh discloses ***three*** different approaches for "transferring media content" to a "rendering device" –none of which involving the functionality of limitations 1-f or 1-i– a POSA ***having common sense*** would have been ***dissuaded*** from seeking out another reference, such as Qureshey, to concoct a ***fourth*** approach involving the functionality of limitations 1-f and 1-i. *Id.*, ¶176; *Ex Parte Rinkevich*, 2007 WL 1552288, *4 (B.P.A.I. May 29, 2007) (A POSA "*having common sense*… would not have reasonably looked to [another reference] to solve a problem solved by [primary reference]."); *Ex Parte Norwalk* , 2022 WL 1315407, *4 (P.T.A.B. Apr. 28, 2022) ("Where [primary reference] has solved the problem of focus, the only reason to add the focusing element of [another reference] is the hindsight teachings of Appellant's claims."). This is especially the case because

such a ***fourth*** approach would have required altering Al-Shaykh's principles of operation, and Google points to nothing in the prior art suggesting that Al-Shaykh's three approaches were in need of further modification. Ex.2018, ¶176. To the contrary, a POSA would have found Al-Shaykh's ***three*** approaches to suitably accomplish Al-Shaykh's goal of transferring media content on the home network. *Id.*

Thus, a POSA would not have been motivated to modify Al-Shaykh with Qureshey because that would have required a POSA to alter Al-Shaykh's principles of operation. *Id.*, ¶177.

Second, Google improperly relies on motivations in the '615 Patent, rather than deriving a motivating reason directly from the prior art, to support its proposed modification to Al-Shaykh. *Purdue*, 643 F.App'x at 966; *Mintz,* 679 F.3d at 1377.

Without citing to any support in the prior art, Google contends that a POSA would have modified Al-Shaykh "to improve the system by preventing any disconnection or failure of a mobile control device to impact ongoing playback on the rendering device" and to "enable[] storage of URLs on the rendering device such that the rendering device can retrieve the content to be played back without assistance from the mobile control device." Petition, 34. However, Google is improperly repackaging the teachings found in the '615 Patent as the basis for why a POSA would have modified Al-Shaykh to achieve what is claimed by the '615

Patent. Ex.1001, 12:53-61 (explaining invention enables "playback device" to "fetch content ***on its own without*** use of a controller and "***run on its own*** to fetch the content."), 15:59-67 (explaining that, after "music information" like "an identifier for a single track" "is handed from the third-party application to the local playback system, there is no further synchronization between the two systems."). Google's reliance on the words and motivations of the '615 Patent demonstrates Google's failure to identify an adequate motivating reason for a POSA to have modified Al-Shaykh with Qureshey. Ex.2018, ¶178.

Third, there are affirmative reasons why a POSA would not have been motivated in 2011 to modify Al-Shaykh as Google proposes. *Winner Int'l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n.8 (Fed. Cir. 2000) (evaluating motivation to combine concerns "what is, on balance, desirable," such that "benefits, ***both lost and gained***, should be weighed against one another" in holistic analysis).

As a first affirmative reason, Al-Shaykh discloses ***three*** different approaches for a "mobile device" to transfer "media content" to a "rendering device." A POSA ***having common sense*** would not have reasonably looked to Qureshey to solve a problem already solved by Al-Shaykh ***three*** times over. Ex.2018, ¶181.

As a second affirmative reason, Google fails to appreciate the complexities that a POSA would have faced in 2011 had the POSA attempted to modify Al-Shaykh to incorporate the teachings of Qureshey. *Id.*, ¶182. A POSA would have

understood that Google's proposed modification to Al-Shaykh would have been a significant undertaking that would have deterred a POSA from making the proposed modification. *Id*.

In this regard, because Al-Shaykh does not involve "one or more first cloud servers" capable of "adding, to the local playback queue [of a particular rendering device], one or more resource locators," Al-Shaykh would have been fundamentally altered to incorporate these one or more new cloud components. *Id.* Moreover, Al-Shaykh's "mobile device" would have been modified with new capability so that it could cause these newly-incorporated cloud components to "add multimedia content to a local playback queue on the particular playback device" by "adding, to the local playback queue, one or more resource locators…." *Id.* Further, Al-Shaykh's "rendering device" would have been modified with new capability to maintain a "playback queue" and to establish a communication channel with the newly-incorporated cloud components to enable them to populate this newly-maintained "playback queue." *Id*. Further still, because Al-Shaykh's "rendering device" does not retrieve media content from a cloud server, it would need to be further modified with new capability to perform the "retrieving" function of limitation 1-i. *Id.* Otherwise, the newly-modified version of Al-Shaykh would be inoperable. *Id.* After all of these modifications, a POSA would not even recognize Al-Shaykh within Google's creation.

As a third affirmative reason, Google fails to consider the design trade-offs associated with adding "Qureshey's back-end server functionality" to Al-Shaykh. A POSA would have understood that there are benefits lost by deviating from Al-Shaykh's approaches that involve a mobile device serving as a local media server or a standalone media server in the "home network," which would have discouraged a POSA from making Google's proposed modifications. *Id.,* ¶183.

For example, a POSA would have appreciated that modifying Al-Shaykh as Google proposes would have made Al-Shaykh wholly-dependent on a connection to the Internet to playback any media content on a rendering device. *Id.* Thus, if the Internet connection went down, the newly-incorporated cloud components of the modified Al-Shaykh would be unreachable, thereby making the modified system unusable. *Id.* As such, a POSA would have appreciated that Al-Shaykh's media server in the "home network" approach offered better reliability for playback of media than an approach that depended on the claimed "one or more first cloud servers." *Id.*

As another example, a POSA would have understood that the proposed modification to Al-Shaykh would have introduced greater network latency as compared to Al-Shaykh's actual system. *Id,* ¶184. Indeed, Google's modifications would have meaningfully increased the amount of time it takes for a rendering device to begin playing back multimedia content due to the newly-incorporated cloud

components that are not part of Al-Shaykh's actual system. *Id.* For instance, added latency would come from the rendering device receiving resource locators from a first cloud server and the roundtrip time involved in the rendering device retrieving media content from a second cloud server, as opposed to the rendering device simply receiving media content directly from the mobile device or dedicated media server on the home network. *Id*. This increased network latency is another reason why a POSA would have appreciated that Al-Shaykh's media server in the "home network" approaches were more desirable than the claimed cloud-based approach. *Id.* In fact, Al-Shaykh touts that its approaches of "transferring media content from a mobile device to a home network … ***minimize the delay*** to send the media content from an application on the mobile device to an external rendering device." Ex.1007, ¶61.

Because Google fails to consider the benefits lost by the proposed modifications and fails to present evidence that a POSA would have considered the claimed cloud-based approach to be more desirable than Al-Shaykh's media server in the "home network" approaches, Google fails to establish that a POSA would have been motivated to modify Al-Shaykh in the manner proposed by Google. Ex.2018, ¶184.

Thus, Google fails to show that a POSA would have been motivated to modify Al-Shaykh to incorporate features of Qureshey. *Id.*, ¶185.

g. Petition, 35-36. However, Google fails to establish that Al-Shaykh teaches this limitation for various reasons.

First, as explained, Al-Shaykh fails to teach the "transferring ***playback***" and "transfer ***playback***" aspects of limitations 1-c, 1-d, and 1-e. *Supra* §VI.A.2. Thus, Al-Shaykh also fails to teach limitation 1-g, which recites that "***transferring playback*** from the control device to the particular playback device" comprises "causing playback at the control device to be stopped."

Second, Al-Shaykh discloses the ***exact opposite*** function required by limitation 1-g. Instead of "causing playback at the control device to be ***stopped***" as part of "transferring playback," Al-Shaykh's "mobile device" ***begins*** (and/or ***resumes***) rendering the "media content" after transferring the "media content." Ex.1007, ¶132. Specifically, Al-Shaykh discloses, in response to "enabl[ing] transfer of the media content to a target rendering," "the media application [of the mobile device] may ***begin and/or may resume rendering of the media content on the mobile device 11*** substantially simultaneously with the transfer to and/or the rendering of the media content on the target rendering device." *Id*.

In fact, based on this same disclosure in Al-Shaykh's foreign publication, the European Patent Office recently concluded "that when a transfer is enabled [in Al-Shaykh], ***the mobile*** and the rendering target devices ***plays*** [*sic*] ***the media items simultaneously***." Ex.2026, 12.

Moreover, Al-Shaykh's teaching that a "mobile device" ***begins*** (and/or ***resumes***) rendering the "media content" after transferring the "media content" directly conflicts with Google's own characterization of what limitation 1-g requires—namely that "***enabling transfer*** of media content to [a] rendering device ***stops playback*** at the mobile device." Petition, 35.

Google also fails to point to any passages from Al-Shaykh that would change a POSA's opinion. Ex.2018, ¶212. Specifically, Google has advanced three reasons why Al-Shaykh allegedly teaches limitation 1-g, but none of them are persuasive.

First, Google asserts that Al-Shaykh discloses a "user" can "use the mobile device to start and stop external rendering of the media content" sometime after "transferring media content" to control playback at the "target rendering device." Petition, 35 (citing Ex.1007, ¶53); *see also* Ex.1007, ¶92. However, "us[ing] the mobile device to start and stop ***external rendering*** of the media content" is irrelevant to limitation 1-g's requirement of "causing playback ***at the control device*** to be stopped." Ex.2018, ¶213. Moreover, because the claim requires that "transferring playback from the control device to the particular playback device" involves the "***control device***" "causing playback at the control device to be stopped," a POSA would not have understood that ***user input*** provided at the "mobile device" ***after*** "transferring media content" separate and apart from such transfer would meet limitation 1-g. Ex.2018, ¶214.

Second, Google asserts that "enabling the transfer of media content to the rendering device would cause the mobile [device] to stop playback" because "Al-Shaykh explicitly notes that ***disabling*** causes 'the target rendering device [to] stop rendering the media content 15.'" Petition, 35 (citing Ex.1007, ¶100). However, Al-Shaykh's disclosure that "the user 12 may invoke the media transfer control 51 to ***disable the transfer*** of the media content 15" from the mobile device to the rendering device is irrelevant to limitation 1-g, which requires "***transferring playback from*** the control device to the particular playback device." Moreover, while Al-Shaykh's ¶100 discusses both "enabl[ing]" and "disabl[ing]" the "transfer of media content," Al-Shaykh does not disclose that enabling the transfer of media content "caus[es] playback at the [mobile] device to be stopped," as required by limitation 1-g. To the contrary, as noted above, Al-Shaykh discloses the opposite. Ex.1007, ¶132.

Third, Google asserts that "a POSA would find Al-Shaykh ***renders obvious***" limitation 1-g because Al-Shaykh discloses that "'rendering of the music content on the initial target rendering device may be stopped, and … the rendering of music content on the new target rendering device may begin'" when "transferring playback ***from an initial rendering device*** to a new rendering device." Petition, 36. However, disclosure about a user using the "mobile device" to "transfer[] playback ***from*** an initial ***rendering device to*** a new ***rendering device***" says nothing about "transferring playback ***from*** the ***control device to*** the particular ***playback device***," as required by

limitation 1-g. Ex.2018, ¶217. Moreover, this disclosure does not change Al-Shaykh's express disclosure that the "mobile device" ***begins*** (and/or resumes) rendering the "media content" after transferring the "media content." *Id*.

For at least the foregoing reasons, Google fails to establish that Al-Shaykh teaches limitation 1-g.

5. Ground II: No Motivation to Combine for Limitation 1-g

Google asserts that Phillips and Al-Shaykh could be combined such that, "when Al-Shaykh's system completes the transfer of playback to a particular rendering device, it would terminate the display of content at the mobile device, as Phillips teaches." Petition, 37. A POSA, however, would not have been motivated to combine Al-Shaykh with Phillips in the manner proposed by Google for several reasons. Ex.2018, ¶273.

First, Google sets forth many of the same high-level reasons why a POSA allegedly would have been motivated to combine Al-Shaykh and Phillips as it did for Al-Shaykh and Qureshey (Petition, 38) and these high-level reasons fail for the same reasons discussed before. *Supra* §VI.A.1; Ex.2018, ¶274-75.

Second, Al-Shaykh expressly ***teaches away*** from several aspects of well-known systems like Phillips and proposes a different solution that addresses the drawbacks of such systems. Ex.2018, ¶276. In this regard, a POSA would have been discouraged from seeking out the teachings of Phillips to modify Al-Shaykh.

Id.

For instance, Al-Shaykh criticizes the "media application extension" approach because "the status of the home network and the availability of rendering devices is not displayed and is not accessible until the user invokes the 'Show Via Home Network' function," and "[a]fter invoking the 'Show Via Home Network' function, the user must wait a delay time while the phone accesses the home network and discovers the available rendering devices for display in a rendering device selection list." Ex.1007, ¶13.

Like this well-known approach, in Phillips, the availability of a "rendering device" is not displayed until a user initiates the "display transfer process," and after initiating such process, the user must undesirably wait while the "mobile device" discovers an available "rendering device" to "transfer the display of video content." Ex.2018, ¶278; Ex.1006, 9:22-29. Because Phillips discloses the very type of approach that Al-Shaykh disparages, a POSA would have been discouraged from seeking out Phillips to modify Al-Shaykh. Ex.2018, ¶278.

Third, Google's assertion that "the teachings of Phillips ***can*** be implemented to Al-Shaykh's system when transfer of playback to a particular device is complete" (Petition, 37) does not mean that a POSA ***would*** have been motivated to combine Al-Shaykh with Phillips, much less in a manner to achieve the Challenged Claims. Ex.2018, ¶279; *Personal Web*, 848 F.3d at 993-94.

Moreover, Google's assertion in this regard is based on the false premise that "***Al-Shaykh*** and Phillips disclose methods to seamlessly ***transfer playback*** of media content from a control device to a playback device ...." Petition, 39. As explained, Al-Shaykh does not disclose "transferring ***playback***." *Supra* §VI.A.2. Because Google bases its opinion on this false premise, Google's rationale to combine Al-Shaykh with Phillips is fatally flawed. Ex.2018, ¶280.

Fourth, Google summarily contends that "both references enable users to transfer playback to various devices and playback content on those devices from the Internet, which provides much greater accessibility to content than traditional systems that were limited to playback of content locally stored on the network." Petition, 38. However, Al-Shaykh does not "enable users to transfer ***playback***," as explained above. *Supra* §VI.A.2.

Moreover, Google merely asserts that both references ***individually*** "provide much greater accessibility to content than traditional systems that were limited to playback of content locally stored on the network." Petition, 38. Google, however, provides no explanation as to why "greater accessibility to content" would have been a motivating reason for a POSA to modify Al-Shaykh –which already "provide[d] much greater accessibility to content than traditional systems" according to Dr. Bims—with Phillips. Ex.2018, ¶282.

Fifth, Google's assertion that both Al-Shaykh and Phillips disclose "media

playback systems [that] provide a more affordable option that mixes expensive control devices with low-cost rendering devices and improves the user's video watching experience at home by providing the flexibility of seamlessly using the rendering devices" (Petition, 39) is not a legitimate reason why a POSA would have been motivated to combine Al-Shaykh with Phillips. *ActiveVideo*, 694 F.3d at 1328; Ex.2018, ¶283. Even if Google's assertion was true, Google provides no explanation as to why modifying Al-Shaykh with Phillips would provide a "more affordable" or "flexibl[e]" option than Al-Shaykh alone. To the contrary, a POSA would have understood that modifying Al-Shaykh with Phillips would have fundamentally altered Al-Shaykh's express mode of operation and diminished the functionality of Al-Shaykh's "mobile device" to control playback at a rendering device. *Id.* Thus, a POSA would not have found Google's proposed modification to be an "affordable option" that "improves the user's video watching experience at home…." *Id.*

Sixth, a POSA would disagree with Google's assertions that "a POSA would at least have looked to similar references in the art [as to Al-Shaykh] for further disclosures of networked playback systems to determine what occurs at the mobile device when playback is transferred to a rendering device" and "thus, a POSA would… have found it obvious to combine Al-Shaykh and Phillips in this way" "to require playback at the mobile device to stop…." Petition, 40.

To start, Google's assertion is based on multiple false premises including (i)

"Al-Shaykh's system transfers playback to a rendering device and allows the mobile device to control this 'external rendering'" and "a POSA would understand this to require playback at the mobile device to stop," and (ii) a POSA would have needed to look beyond Al-Shaykh to determine what occurs at the "mobile device" when media content is transferred to a "rendering device." *Id*. However, Al-Shaykh ***expressly*** tells a POSA what occurs at the "mobile device" when it transfers media content –the "mobile device" ***begins or resumes*** rendering of the media content that was transferred (Ex.1007, ¶132)—which directly undermines Google's conclusory assertion that "a POSA would understand this to require playback at the mobile device to stop…." Petition, 40; Ex.2018, ¶285.

Next, Google asserts that a POSA could "incorporate terminating playback at the mobile device when playback is transferred to rendering device, as taught by Phillips, into Al-Shaykh's system…." *Id*., 39-40. However, a POSA would have understood that modifying Al-Shaykh with Phillips's functionality would have fundamentally altered Al-Shaykh's principles of operation that already worked for its intended purpose in a completely opposite manner—by ***beginning*** or ***resuming*** rendering after transferring the "media content," which would have dissuaded a POSA from making such a modification. Ex.2018, ¶286; Ex.1007, ¶132.

Lastly, Google asserts that "a POSA would have been motived [*sic*] to implement this functionality, as described in Phillips, because it improves the system

that depends on claim 1 (dependent claims 6-12). Additional flaws in Grounds I and II for the dependent claims are addressed below.

1. Claim 6

Google further fails to establish that Ground I or II teaches "a set of inputs to ***transfer playback from the playback device back to the control device***" and that "transferring playback from the playback device back to the control device" comprises the functions recited in claim 6.

Google asserts that Al-Shaykh's input to "***disable*** the transfer to the playback device" amounts to a set of inputs to "***transfer playback*** from the playback device ***back to the control device***," as recited in claim 6. Petition, 51. However, a POSA would have understood that Al-Shaykh's input to "disable the transfer to the playback device" merely stops the transfer of "media content" from Al-Shaykh's "mobile device" to the "target rendering device," such that the "mobile device" no longer relays the "media content" directly to the "target rendering device" or facilitates the retrieval of "media content." Ex.2018, ¶¶242-43.

2. Claim 9

Google also fails to establish that Ground I or II teaches the claimed "message" that is sent from the "control device" to the "streaming content service" and "causes the one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device," as required by claim 9.

Simply put, Al-Shaykh discloses three different approaches in which "media content" is transferred from a "mobile device" to a "target rendering device," and none of them involve the message required by claim 9. *Supra* §VI.A.2; Ex.2018, ¶252. Google's assertion to the contrary is unsupported by Al-Shaykh. Petition, 55. Google points to Al-Shaykh's "service-specific application on a mobile device" associated with a "remote content service," but such general disclosure simply does not amount to the specific functionality required by claim 9. Ex.2018, ¶¶253-56.

3. Claim 11

Claim 11 requires "an input that causes playback at the control device to be stopped" at the time of transfer. Thus, Google's assertion that "a user may pause content… ***after*** selecting a selectable option to transfer playback and selecting a particular playback device" (Petition, 56-57) does not satisfy claim 11.

Further, Google's assertion that a user may "***pause*** content ***before***" enabling transfer is irrelevant because Al-Shaykh discloses that the mobile device ***begins*** (and/or ***resumes***) rendering the "media content" after transferring the "media content." *Supra* §VI.A.4.

4. Claim 18-24 and 27-29

Google fails to establish that Ground I or II invalidates claims 18-24 and 27-29 for at least the reasons discussed in connection with dependent claims 6-12.

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

SONOS, INC.,
Patent Owner.

Case No. IPR2021-01563
U.S. Patent No. 9,967,615

PETITIONER'S REPLY

3. A POSA would have been motivated to combine Al-Shaykh and Qureshey

A POSA would have combined Al-Shaykh and Qureshey, as proposed, because (i) both references are analogous art, deal with similar devices, and solve problems with those devices (none of which Sonos disputes, *see supra* § I.B), (ii) Al-Shaykh discloses rendering devices directly retrieving media content from a remote server for playback (*see supra* § II.A) but omits the details on the back-end functionality—details Qureshey provides (*see Realtime Data, LLC*, 912 F.3d at 1374), and (iii) the combination improves the robustness of playback at the rendering device (which Sonos also does not dispute, *see* POR, 37, 40-41). *See* Pet., 13-16, 33-34. Sonos' counterarguments misinterpret Al-Shaykh's disclosure and rely on conclusory assertions that the proposed combination could not have been physically implemented.

a. Sonos' "affirmative reasons" a POSA would not have combined the references are flawed.

Sonos relies on three flawed "affirmative reasons" a POSA purportedly would not have combined the references: (i) Al-Shaykh discloses three approaches to playback content on the rendering device and would not seek a fourth; (ii) the proposed combination fundamentally alters Al-Shaykh; and (iii) Google fails to appreciate design tradeoffs resulting from the combined system. POR, 41-44.

All three reasons fail because Al-Shaykh discloses rendering devices directly obtaining content from the remote content service for playback, which is what the Petition relied on, in addition to the "three approaches" Sonos identifies. *See supra* § II.A.

Sonos' second reason is legally flawed as relying on an improper obviousness standard, as explained in Section I.C. Moreover, the purportedly "complicated" modifications—incorporating (i) "cloud components," (ii) a local playback queue at the rendering device, (iii) communication channels between cloud components and the rendering device, and (iv) the ability of the rendering device to retrieve content—are not complex at all. Al-Shaykh discloses these components and functionality, but lacks implementation details, which would have motivated a POSA to look for and implement the teachings of Qureshey. Pet., 42-44; Ex. 1003, ¶¶ 126-129. For example, Al-Shaykh's system includes cloud components, such as a "remote content provider" providing a "remote content service" over the internet. Pet., 43; Al-Shaykh, [0082]. These cloud components communicate with devices in the home network, including the mobile device and numerous rendering devices. *Id.*; Al-Shaykh, Fig. 1. Further, a POSA would have understood that the rendering devices would include storage, and the combination merely requires storing specific information, e.g., URLs and audio content, in it.

Sonos' third reason alleges design issues with the combined system including Internet disconnection causing system failure or increased network latency—neither of which affects the claimed invention. POR, 43-44. Sonos ignores the flexibility of Al-Shaykh's system, which provides a variety of playback modes and sources of media content to enrich the user's playback experience. *See* Al-Shaykh, [0094] (playback flowing through or not flowing through the mobile device), [0093-6] (playback of "internet media content" and from a local server or remote content service). In line with the goal of flexibility, the Al-Shaykh-Qureshey combination allows playback of content from a remote internet source at the rendering device without going through the mobile phone (*see supra* § II.A), and a user may switch playback modes if faced with issues like internet disruptions and network latency. For example, in the combined system, a user could playback music at the rendering device from (i) a remote source, which would provide access to a large variety of content, or (ii) a local server, which may not require an internet connection and have improved network latency but provide access to limited, stored content. Thus, the combined system allows users flexibility to choose different modes based on environment characteristics.

b. Sonos' teaching away arguments are legally and factually insufficient.

Sonos incorrectly alleges that Qureshey implements the "mobile-device-as-server," "sharing application," and hidden user controls distinguished in Al-

Shaykh, which purportedly teaches away from combination. POR, 27-29. Qureshey does not teach away from Al-Shaykh as a matter of law because it does not expressly discourage combination. *See supra* § I.C. Additionally, Sonos is also incorrect because Qureshey does not implement these features at all.

First, Qureshey's PC IPAN client is not a "mobile-device-as-server," which Al-Shaykh describes as a passive mobile device that merely acts as a source of media content but is unable control playback through user inputs at the mobile device. *See* POR, 28. Instead, Qureshey's user can provide input to control playback at the audio device, including a "play button 1712" to play a song, other playback control inputs 1782-1796, or a "schedule button 1710" to "schedule [playback of] playlists." Qureshey, 23:28-26:19, Figs. 17A-17B and 17E, 2:1-12.

Second, Qureshey's IPAN software cannot, on its own, disclose the "sharing application" approach, as disclosed in Al-Shaykh. *See* POR, 28-29. This approach "artificially separates the media experience on the mobile device" into two separate applications—one that controls playback at the mobile device but is "unaware of and cannot use rendering devices … in the home network" and another that enables transferring playback to rendering device to play content stored on the mobile device. *Id*. Sonos, however, only identifies Qureshey's IPAN software and does not explain what separate application Qureshey requires for the sharing application approach.

Third, Sonos argues that Qureshey adopts graphical user interfaces with hidden controls not readily visible to a user. POR, 29. But Sonos ignores Qureshey's express disclosure of a synchronization button immediately visible and capable of causing an IPAN cloud server to add an updated playlist to the space 1512 of an audio device. Pet., 30-31.

C. Limitation 1-g: *transferring playback … further comprises (b) causing playback at the control device to be stopped*

1. Al-Shaykh discloses limitation 1-g

Al-Shaykh discloses limitation 1-g, and Sonos' arguments to the contrary technically fail. Moreover, Sonos agrees that Al-Shaykh discloses functionality to stop rendering at a device from which playback was transferred from, supporting that limitation 1-g is at least rendered obvious solely by Al-Shaykh.

In Al-Shaykh, after transfer is invoked (i.e., the media transfer control 51 or control/indication element 71), playback transfers to the rendering device from the mobile device, which acts as an "external control point" to "start and stop external rendering of [] media content." Pet., 35; POR, 56 (Sonos admitting Al-Shaykh's mobile device "control[s] playback at a rendering device"). To act as an *external* control point, playback at the mobile device must stop. Pet., 35.

Sonos argues that (i) the mobile phone acting as an external control point to control external rendering is "irrelevant," and (ii) Google's mapping points to user input *after* the input that "transfers playback" that cannot meet limitation 1-g.

2. Alternatively, a POSA would have been motivated to combine Al-Shaykh and Phillips to render obvious limitation 1-g

Sonos never disputes that Al-Shaykh and Phillips collectively teach limitation 1-g, and only argues a lack of motivation to combine these references. But Sonos' arguments are legally flawed.

First, a POSA would have been motivated to combine Al-Shaykh and Phillips because (i) both references are analogous art in the same field of endeavor, deal with similar devices, and target solving the same problems in those devices (none of which Sonos disputes, *see supra* § I.B), (ii) Al-Shaykh lacks detail regarding what occurs at the mobile device when playback is transferred to a rendering device—details Phillips provides (*see Realtime Data, LLC*, 912 F.3d at 1374), and (iii) the combination improves the system by allowing users to perform other tasks on their mobile phone while playback continues on the rendering device. Pet., 37-40.

Second, Sonos repeats its flawed arguments about general motivations (addressed in Section § I.B) and its misinterpretation of Al-Shaykh's disclosure of transferring playback (addressed in Section II.A).

Third, Sonos wrongly argues that Al-Shaykh and Phillips teach away from combination (addressed in Section § I.C). These arguments mischaracterize Phillips arguing that its mobile device is unaware of available playback devices

until playback transfer is initiated. POR, 53-54. But Phillips' mobile device is continuously aware of available rendering devices through implementing a standalone discovery process that allows the mobile phone to *automatically and/or periodically* receive updates from available rendering devices before initiating the "display transfer process." Phillips, 4:10-24, 3:54-4:9. Thus, when transfer is initiated, there is no delay to discover what rendering devices are connected, as Sonos argues, because discovery is continuously ongoing. *See* POR, 54.

Lastly, Sonos argues that there is no benefit in allowing users the flexibility to perform other tasks on their mobile phone while playback continues on the rendering devices. POR, 57-58. Sonos, however, presents no counter-evidence to Dr. Bims' unrefuted testimony that flexibility would have motivated a POSA to modify Al-Shaykh with Phillips because it improves the overall system. Pet., 40; Ex. 1003, ¶ 119. In fact, the portions of Phillips that Sonos cites supports Google's argument. POR, 58 (citing Phillips, 15:28-35). Phillips states that a user could "turn[] off her tablet" because she can watch the desired media on the rendering device. Such flexibility (i.e., turning off the tablet or performing other tasks on the table) is a benefit of Phillips' system which would have motivated a combination with Al-Shaykh's system.

D. Limitation 1-i: *causing the particular playback device to play back the multimedia content, wherein the particular playback device playing back the multimedia content comprises the particular playback device retrieving the multimedia content from one or more*

transfer playback from the playback device back to the control device

Al-Shaykh discloses this limitation because it discloses invoking media transfer control 51 or control/indication element 71 to disable the transfer of playback to the rendering device and revert playback back to the mobile device. Pet., 49-51. In response, Sonos merely repeats its "transferring playback" arguments refuted in Section II.A.[3] Accordingly, its arguments fail for the same reasons discussed above.

B. Claim 9: … *sending a message to the streaming content service that causes the one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device*

The combined Al-Shaykh-Qureshey system discloses this limitation. Pet., 55.

First, Al-Shaykh discloses "sending a message to the streaming content service" because the media transfer control 51 or control/indication element 71 are the user inputs received via a "service-specific application" for a "remote [media] content service" and cause playback to be transferred. *Id; see supra* § II.A. A POSA would have understood these inputs into the "service-specific application"

[3] Sonos does not challenge Google's arguments relating to limitation [6-b]. *See* POR, 62; Pet., 51-52.

send messages to the associated streaming content service to facilitate transfer. *Id.* Further, in the combined Al-Shaykh-Qureshey system, these input messages would cause *one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device*. *See supra* § II.B.

Second, Sonos' only counterargument is that Al-Shaykh's "three different approaches" do not disclose the claimed "message." POR, 62-63. Not only does this improperly ignore critical disclosures of Al-Shaykh (*see supra* § II.B.3) but it also fails to appreciate that Al-Shaykh discloses receiving inputs at a "service-specific application" on the mobile device, which is "designed to provide access to media content from one or more associated content services." Pet., 55 (citing Al-Shaykh, [0006], [0090], [0095]).

C. Claim 11: … *detecting an input that causes playback at the control device to be stopped*

Al-Shaykh discloses media controls 42 with a "pause" control to stop playback at the mobile device, which Sonos admits can occur. Pet., 56-57; POR, 63. Sonos' only rebuttal repeats its misreading of Al-Shaykh about setting the playback state to PLAY when initiating transfer (*see supra* § II.A), which does not alter detecting an input, such as "pause," at the mobile device. *See* POR, 63.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
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U.S. Patent No. 9,967,615

Inter Partes Review Case No.: IPR2021-01563

PATENT OWNER'S SUR-REPLY

playback from the playback device ***back to the control device***," as required by claim 6. POR, 62 (*citing* Ex.2018, ¶¶242-43). Google does not dispute otherwise.

B. Claim 9

Google asserts that Al-Shaykh discloses claim 9 because Al-Shaykh discloses "sending a message to the streaming service." Reply, 23. However, Google points to no disclosure in Al-Shaykh of the "mobile device" sending a message to a streaming service (Petition, 55), but more to the point, claim 9 specifically recites that the claimed "message" (i) is sent from the claimed "control device" to the "streaming content service" and (ii) "causes the one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device."

Disclosure of a general message to a streaming service (even assuming it exists in Al-Shaykh) simply does not achieve the specific latter requirement. Indeed, Google never articulates (nor could it) how the combination of Al-Shaykh and Qureshey satisfies the latter requirement. Reply, 23-24; Petition, 55 (relying exclusively on asserted reasons for claim 1).

Moreover, Dr. Schmidt's reasoned explanation as to why Al-Shaykh combined with Qureshey does not satisfy claim 9 (*see* POR, 62-63 (*citing* Ex.2018, ¶¶252-56)) is unrebutted. Reply, 23-24.

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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SONOS, INC.,
Patent Owner.

IPR2021-01563
Patent 9,967,615 B2

Record of Oral Hearing
Held: January 18, 2023

Before MICHAEL R. ZECHER, TERRENCE W. McMILLIN, and GARTH D. BAER, *Administrative Patent Judges.*

were just put forth. The principal of operation that Sonos is looking at for Al-Shaykh, it's not -- it's ignoring those disclosures we just talked about in paragraphs 80, 81, and 94. It's looking at a local system that only acts locally, but that's not what Al-Shaykh discloses.

Al-Shaykh discloses a network media playback system with devices -- that can communicate with local devices to play back content that's, you know, stored in a local server at home, but also have the capability to communicate with remote devices, like the remote content provider it discloses itself. So it's not limited to that local -- that principal operation that Sonos is looking at is just incorrect, so --

JUDGE ZECHER: So as long as we don't read Al-Shaykh as being limited, as you would say, to this local implementation; that we kind of consider it for everything it teaches, then it would undermine their change of principal operation argument. Is that what you're saying?

MR. AGGARWAL: Yes, Judge.

JUDGE ZECHER: Okay.

MR. AGGARWAL: And I'd like to move on to Limitation 1G. I believe the main argument Sonos had raised was with respect to paragraph 132 in Al-Shaykh that discloses -- that includes one sentence that Patent Owner points to, disclosing simultaneous playback. But this sentence, if you go to it, it would be helpful to just read the entire paragraph, or the pertinent parts of that sentence, to understand what it actually discloses and what it doesn't.

JUDGE BAER: Just so the record's clear, just tell us exactly what Exhibit you're reading from and where.

MR. AGGARWAL: One second, Your Honor. It's from Al-Shaykh, which is Exhibit 1007, paragraph 132. And it's also reproduced on Sonos's slide 10.

JUDGE BAER: Thank you.

MR. AGGARWAL: So Sonos highlighted a specific portion of this to allege that Al-Shaykh discloses simultaneous playback. But even though it discloses simultaneous playback, this is just an exemplary paragraph. It says that media application may begin and/or resume rendering the mobile device for substantially -- simultaneously.

And if you look at the sentence right before it, it explains that the media application may change the internal state from pause to play and/or may take other actions associated with the selection of play. That's talking about there are multiple things that could be happening. And one of the things that could happen is simultaneous playback, but that sentence, that one sentence should not govern all of Al-Shaykh's disclosure to -- restrict it to just disclosing simultaneous playback.

JUDGE ZECHER: Did you actually cite to this paragraph in your mapping of Element 1G?

MR. AGGARWAL: We may have, Judge. I'm not sure off the top of my head. And this also, the fact that this is only exemplary disclosure, it goes to showing that this actually doesn't teach away from anything. It's only exemplary. And the teaching away law requires discouraging the proposed combination. At most, this is an example of what could happen in Al-Shaykh. It doesn't discourage playing back at one device or the other device.

JUDGE BAER: I mean discourage, to be clear -- I mean, you're saying it's an option. Opposing counsel said it was the opposite. Isn't the point that to discourage, it must affirmatively discourage, not discourage by its silence, not discourage by its affirmative teaching of something else, but it would affirmatively have to say whatever you do, don't stop playback on the original device?

MR. AGGARWAL: Yes, and *In re Katz* is exactly on point for that principal. It tells us that when you just merely distinguish or mention a preference of one feature over another, that is not sufficient to discourage combination. It has to take it to the next level and explicitly require a discouragement for a person of skill in the art to be -- to understand it to not actually want that combination to occur.

JUDGE ZECHER: Is it also fair to say that we'd need to balance that disclosure in 132 paragraph of Al-Shaykh with what you actually cite to in paragraph 174 of Al-Shaykh?

MR. AGGARWAL: Yes.

JUDGE ZECHER: And basically determine look, these are various options that one of skill in the art could take in implementing this system?

MR. AGGARWAL: Very much so, and if we -- at the very -- yes, very much so. That discloses that at the very least, Al-Shaykh does suggest playback at only the rendering device or the playback device, and that's sufficient. That renders it obvious that playback may only happen at the playback device when playback is transferred to the playback device.

And just one follow-up point on that, if we actually could start 26 of Petitioner's slides, similar disclosures were included in Al-Shaykh in paragraphs 162 and 165, which says that video player controls can control

rendering of video content at the mobile device and/or the rendering device. So Al-Shaykh is consistent where that even if there is simultaneous playback, that doesn't have to be the case, as well.

I'd like to move on to some of the arguments Sonos raised regarding Qureshey and playback queue. Despite -- no matter what construction is adopted, Qureshey meets the playback queue. If it's required to play back the playlist that's stored in Qureshey's storage space, as we discussed earlier in columns 35 and 36, there's no requirement for a manual input.

The disclosure Sonos points to, via manual input, I don't believe discuss anything about adding a playlist and then requiring a manual input. It just merely discusses that the playback device has inputs in it, so if a user wanted to use the inputs on the playback device, it can do so. But it didn't seem that related at all to actually adding a playlist to the playback queue and then playing back, which Qureshey discloses in columns 35 and 36.

Moreover, this kind of -- this also ignores the combination that we're presenting. And if we look at slide -- or if you look at paragraph 101 of Dr. Benz's declaration, he explains exactly what happens in the combined Al-Shaykh and Qureshey systems. When a set of inputs is used to transfer playback, the system causes a first cloud server to add URL's associated with locations of the songs in the second cloud server to the storage space 1512.

So in the combination, when you press a transfer input on the media application in Al-Shaykh, what happens is the first cloud server adds the playlist. And we already know in Al-Shaykh it tells us that the rendering device is playing back when that transfer input is provided. So there's no input in the middle of those things happening. And the combination -- and looking at it otherwise would undermine what the combination actually is.

JUDGE ZECHER: What about this point that Patent Owner made about you adopting Patent Owner's construction? The plain and ordinary meaning of a playback queue where you had this kind of weird dynamic of not having construction for this term in your Petition that was filed on September 28th of 2021, we're citing to what appears to be an expert report of Douglas Schmidt on claim construction that's dated February 2022, to basically articulate this position as to what the ordinary and customary meaning of playback queue is. How do you explain that?

MR. AGGARWAL: Yes, Judge. So we adopted the plain and ordinary meaning under the *Western Digital* precedence from this Board. And based on that, afterwards, when we were -- when -- it's still relevant that Sonos's expert commented on what the plain and ordinary meaning is.

And the fact that it happened afterwards is still -- is persuasive that that's what Sonos alleges what a plain and ordinary meaning is, and we're just showing that this is -- these are the expert's words, even knowing what the plain and ordinary meaning is, this is what the expert described it to be.

JUDGE ZECHER: Prior to filing your Petition in September, on September 28th, 2021, did you have any clear articulation of what you understood Sonos to provide as the plain and ordinary meaning of that term?

MR. AGGARWAL: No, Judge.

JUDGE ZECHER: So in other words, it was just this articulation that it should be equated to plain and ordinary meaning, but they didn't explicitly state what that was?

MR. AGGARWAL: That's correct, Judge.

Paper No. 34
Filed: June 12, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC
Petitioner

v.

SONOS, INC.
Patent Owner

IPR2021-001563
U.S. Patent No. 9,967,615

PATENT OWNER'S NOTICE OF APPEAL

Pursuant to 35 U.S.C. §§ 141 and 142, and 37 C.F.R. §§ 90.2 and 90.3, Patent Owner, Sonos, Inc. ("Sonos"), hereby provides notice that it appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision of the Patent Trial and Appeal Board (Paper 33, attached hereto) entered on April 10, 2023 and from all underlying orders, decisions, rulings, institutions, and opinions regarding U.S. Patent 9,967,615 ("the '615 patent") at issue in *Inter Partes* Review No. IPR2021-01563. This notice of appeal is timely filed because it is filed within 63 days of the April 10, 2023 Final Written Decision.

In accordance with 37 C.F.R. § 90.2(a)(3)(ii), the issues on appeal include, but may not be limited to:

(1) The Board's denial (Paper 13) of Sonos's motion to dismiss under 35 U.S.C. § 315(a) (Paper 7);

(2) the Board's determination that claims 1, 6-13, 18-25, 27-29 are unpatentable under 35 U.S.C. § 103 in view of U.S. Patent App. Pub. No. 2011/0131520 ("Ak-Shaykh") and U.S. Patent No. 8,050,652 ("Qureshey");

(3) the Board's determination that claims 1, 6-13, 18-25, 27-29 are unpatentable under 35 U.S.C. § 103 in view of Ak-Shaykh, Qureshey, and U.S. Patent No. 8,799,496 ("Phillips");

(4) the Board's determination that claims 2 and 14 are unpatentable under 35 U.S.C. § 103 in view of Ak-Shaykh, Qureshey, and U.S. Patent No. 8,724,600 ("Ramsay");

(5) the Board's determination that claims 2 and 14 are unpatentable under 35 U.S.C. § 103 in view of Ak-Shaykh, Qureshey, Phillips, and Ramsay;

(6) the Board's claim constructions, failure to construe terms, and/or determination of the level of ordinary skill in the art at the time of the invention;

(7) any other findings or determinations supporting or related to the aforementioned issues, as well as all other issues decided adversely to Patent Owner in any order, decision, ruling, or opinion.

Pursuant to 35 U.S.C. § 142 and 37 C.F.R. § 90.2(a), this Notice is being filed with the Director of the United States Patent and Trademark Office, and a copy of this Notice is being concurrently filed with the Patent Trial and Appeal Board. In addition, a copy of this Notice along with the required docketing fees are being filed with the Clerk's Office for the United States Court of Appeals for the Federal Circuit via CM/ECF.

Respectfully submitted,

Date: June 12, 2023

By: /Cole B. Richter/
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CERTIFICATE OF SERVICE AND FILING

I herby certify that on June 12, 2023, in addition to being filed and served electronically through the Patent Trial and Appeal Board's P-TACTS System, this NOTICE OF APPEAL was filed with the Director of the United States Patent and Trademark Office via Priority Mail Express at the following address:

> Director of the United States Patent and Trademark Office c/o Office of the General Counsel
> United States Patent and Trademark Office
> P.O. Box 1450
> Alexandria, VA 22313-1450

I also hereby certify that on June 12, 2023, this NOTICE OF APPEAL and the requisite docketing fees were filed with the Clerk's Office of the United States Court of Appeals for the Federal Circuit vis CM/ECF.

I also hereby certify that on June 12, 2023, this NOTICE OF APPEAL was served via electronic mail to the following counsel at the addresses designated for service by Petitioner:

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Filed: September 28, 2021

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

SONOS, INC.,
Patent Owner.

Case No. IPR2021-01563
U.S. Patent No. 9,967,615

DECLARATION OF HARRY BIMS IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW

63. It is my opinion that Weel is in the same field of endeavor, providing a separate playlist server and content server, and functionality to distribute media playlists and content to playback devices using an Internet-based system, while controlling playback from a mobile device. '615 Patent, Abstract, Claim 1. For example, Weel, like the '615 patent, explains that it is directed to "provide a method for distributing music that is convenient." *Id.*, [0010].

VIII. Overview of the '615 Patent

64. Similar to the prior art discussed in Section VII, the '615 patent discloses allowing a user to transfer playback of remote streaming of audio, and/or video from a computing device (e.g., laptop or mobile phone) to a playback device (e.g., speaker, multimedia unit such as a television, etc.) in a local area network. '615 Pat., 1:19-28, 2:6-25, 3:28-31, 12:44-67, 13:14-22, 13:54-56. The computing device or controller (used interchangeably) provides a GUI for "navigat[ing] a playlist of many multimedia items and [] control[ing] operations of one or more [playback devices]." *Id.*, 3:28-33, 9:10-47, 11:39-44.

65. Specifically, the '615 patent discloses a local playback network, which includes playback devices and a computing device connected to the "cloud (e.g., Internet)." *Id.*, 11:58-12:67. This allows either device to fetch content from a third-party service via the cloud or Internet. *Id.*

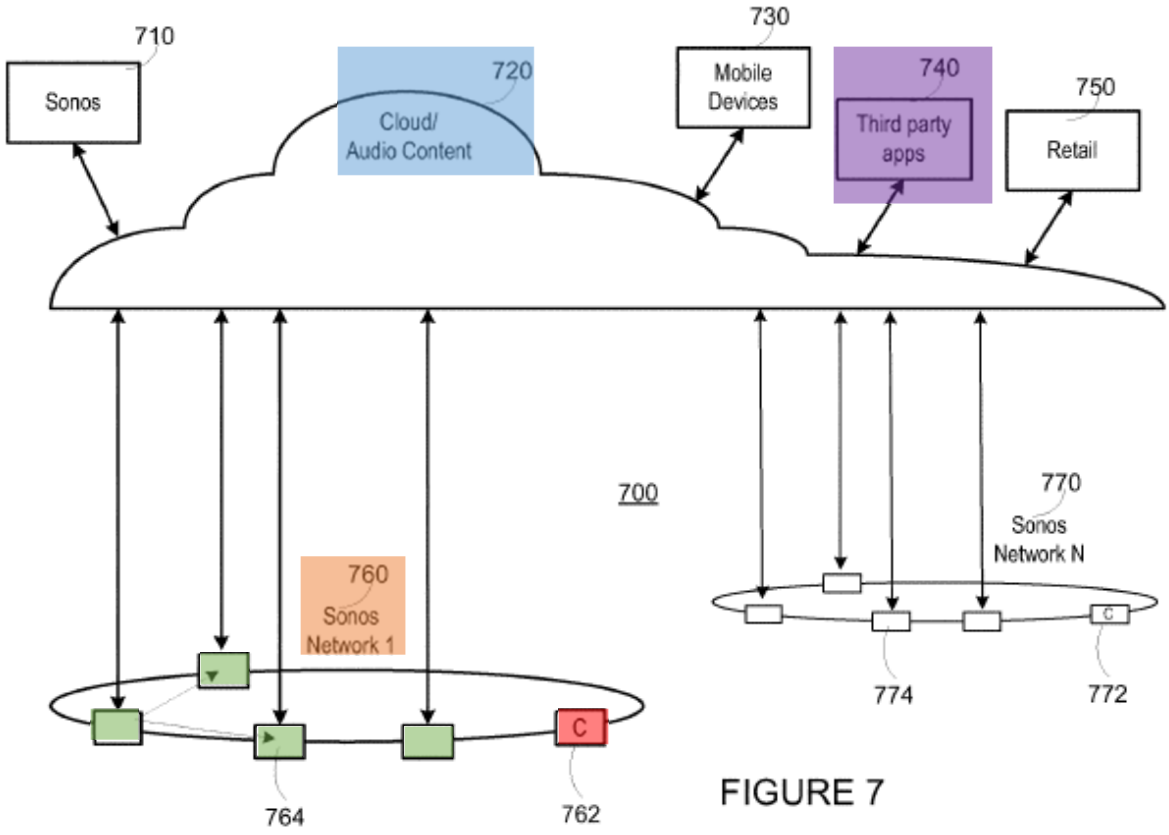


FIGURE 7

66. Further, it discloses that, when a playback device is configured for playback of content, it can "access the Internet [to] retriev[e] media from the cloud (e.g., Internet)." "For example, zone player 602 may contain a uniform resource locator (URL) that specifies an address to a particular audio track in the cloud." *Id.* at 11:65-67.

67. A key distinguishing feature of the '615 patent that the inventors argued before the Examiner during its prosecution is that it "splits functionality between two sets of servers. The one or more first cloud servers 'add the

functionality to allow the rendering device to retrieve content for playback from a remote source. Further, Qureshey discloses media playback systems with servers that provide different functionality, including a first set of at least one server that adds information to the playback device that identifies the location of multimedia content to be played back and a second set of at least one server that is associated with a content service and stores the content to be played back. Thus, it is my opinion that both these grounds would render independent claims 1, 13, and 25 unpatentable. Lastly, to the extent Patent Owner argues that Al-Shaykh and Qureshey (Ground I) do not disclose element [1-g], it is my opinion that Al-Shaykh, Qureshey, and Phillips (Ground II) also discloses this element.

1. Combining Al-Shaykh and Qureshey (Ground I)

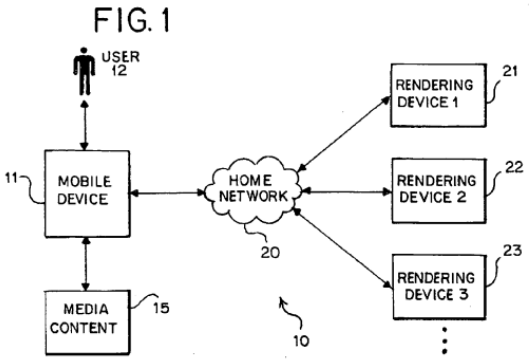
71. A POSA, in my opinion, would have been motivated to and would have found it obvious to combine Al-Shaykh and Qureshey for several reasons.

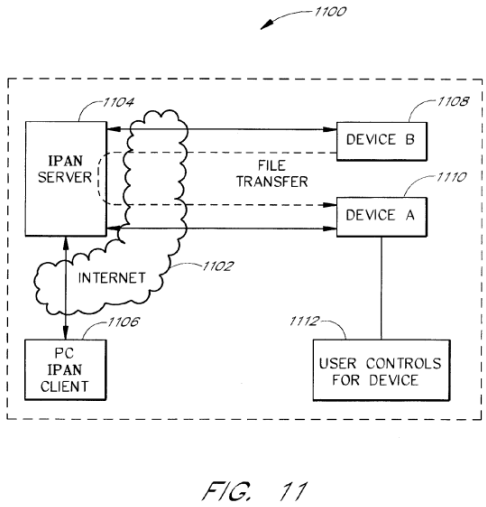
72. First, a POSA would understand that that Al-Shaykh and Qureshey are in the same field of endeavor, deal with similar devices, and are directed to solving the same problems in those devices. For example, Qureshey generally "relates to the field of audio file transfers [to network-enabled audio devices] and, more particularly, relates to the field of management and distribution of audio files over a computer network such as the Internet." Qureshey, 1:16-33, 2:16-33, 24:31-43, 16:29-17:31, 21:40-23:5, Figs. 11, 15, 17B. Qureshey also discusses storing

playlists onto a rendering device. *Id.*, Abstract, 17:2-31. Similarly, Al-Shaykh discloses a system and method for transferring playback of media/music content (which a POSA would understand includes audio files) from a mobile device (which a POSA would understand is functionally equivalent to a PC that connects to a server over a network such as the Internet by executing client software) to a network-enabled device that can playback audio over a home network. *Id*., [0005]; Al-Shaykh, Abstract, [0080], [0082], [0011], [00087], [00090], [00092]. Thus, it is my opinion that a POSA would have understood that both references enable users to transfer playback to various devices and playback content on those devices from the Internet, which, a POSA would understand to provide much greater accessibility to content than traditional systems that were limited to playback of content locally stored on the network. Qureshey, 1:37-52 ("With streaming audio, a user with a Personal Computer (PC), a sound card, and the necessary software can listen to audio programs from anywhere in the world."); Al-Shaykh, [0090].

73. Further, a POSA would understand that both references describe networked media playback systems that include a control device (such as a PC or mobile device) and one or more rendering devices. Al-Shaykh, Abstract, [0078], Fig. 1 (showing mobile device 11 and rendering devices 21, 22, 23 in home network 20; Qureshey, Fig. 11 (showing PC IPAN client 1106 and networked-enabled audio devices 1108, 1110), 16:29-17:31, 2:65-3:4, 3:57-4:3 (describing

that the PC and devices are connected via a local area network). Thus, it is my opinion that Al-Shaykh and Qureshey involve similar media playback systems that are often used in homes or offices and allow users the flexibility of playing content on various device configurations for different scenarios. Al-Shaykh, [0005] ("the user may render the music content on a high quality stereo in the home instead of being limited to playback using the mobile device."); Qureshey, 2:16-20 ("The present invention solves these and other problems by providing a network-enabled audio device for listening to a variety of audio sources with substantially equal convenience").





Al-Shaykh, Fig. 1 Qureshey, Fig. 11

74. Additionally, it is my opinion that a POSA would understand that the references are directed toward solving similar problems. For example, Al-Shaykh and Qureshey disclose methods to transfer playback of media content from a control device to a playback device such that the user can still control playback and

conduct other tasks from the control device. Qureshey, 2:3-13 ("Moreover, even if the user can afford to purchase multiple PC's and install the proper connection, the user would have difficulty playing music in addition to performing other tasks on the PC."), 1:65-2:12, 4:1-3; Al-Shaykh, [0053] (discussing external rendering of content on rendering devices which would allow users to use the mobile control device for other tasks). A POSA, in my opinion, would understand that these media playback systems provide a cheaper option that mixes expensive control devices, such as PCs, with low-cost devices, such as rendering devices. Qureshey, 1:65-2:12, 4:1-3, 1:27-36, 2:58-3:4; Al-Shaykh, [0004].

75. Both Al-Shaykh and Qureshey describe control devices (i.e., a mobile phone in Al-Shaykh and a PC device in Qureshey) that contain a GUI that allows the user to select song(s) for playback on a playback device. Al-Shaykh, Fig. 2, [0085-89]; Qureshey, Figs. 17A-17E, 23:28-25:58. Thus, a desire to improve the GUI in a multimedia playback network would have motivated a POSA to combine Al-Shaykh and Qureshey.

76. Al-Shaykh describes a "media application" which allows for music content searching, discovery, and selection of a playlist, and additionally provides for meta-data associated with media content. Al-Shaykh, [0087]. Relatedly, Qureshey describes a first cloud server (i.e., an IPAN server 1140) that adds resource locators for multimedia content to one or more rendering devices (the

"first target rendering device" in Al-Shaykh, and the "device 1110" in Qureshey). Qureshey, 16:67-17:6. It is my opinion that a POSA would understand that the meta data provided on Al-Shaykh's media application is the same data as the resource locators added by the IPAN server in Qureshey. Additionally, Al-Shaykh expressly says its "media application" is not limited to a specific embodiment of the media use area and may be provided by a server type device. Al-Shaykh, [0083], [0087].

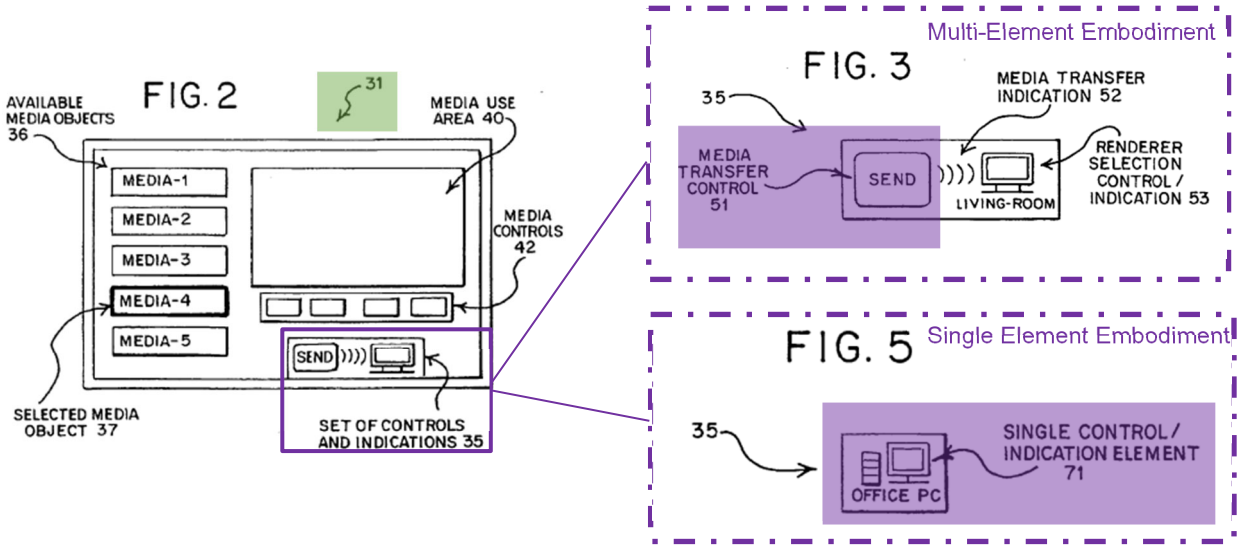
77. Further, the combination of Al-Shaykh and Qureshey achieves the goal of the '615 Patent, specifically "to provid[e] music for playback via one or more devices on a playback data network." '615 Patent, 1:14-15. Thus, a POSA would recognize that the motivation that led to the development of the '615 patent would have been the same motivation used by a POSA to combine Al-Shayk and Qureshey to achieve the same goal.

78. Further, it is my opinion that, based on at least the reasons noted above, Al-Shaykh and Qureshey are analogous art to the '615 patent, and a POSA would have found it obvious to combine them.

the media content 15" to a rendering device (*Id.*, [0100], [0115], Figs. 2-4);

- Figure 5 shows a single element embodiment that includes a control/indication element 71 that can be invoked to "enable and/or disable the transfer of the media content 15" to a rendering device. *Id.*, [0120], Figs. 2, 5.

88. Thus, in my opinion, Al-Shaykh discloses this limitation because the mobile device displays media transfer control 51 and control/indication element 71 as selectable options for transferring playback from the control device (i.e., the mobile device) to a rendering device.



Al-Shaykh, Figures 2, 3, and 5 (annotated)

d. Element [1-d]

89. It is also my opinion that Al-Shaykh *discloses detecting, via the control device, a set of inputs to transfer playback from the control device to a*

f. Element [1-f]

95. It is my opinion that, even though Al-Shaykh does not disclose element [1-f], Qureshey discloses this element.

96. It is my opinion that Qureshey discloses *causing one or more first cloud servers* (e.g., IPAN Server) *to add multimedia content to a local playback queue on the particular playback device, wherein adding the multimedia content to the local playback queue comprises the one or more first cloud servers adding, to the local playback queue* (e.g., when the storage space 1512 of the networked-enabled audio device 1510 contains one or more an initial playlist of URLs)*, one or more resource locators* (e.g., playlist with URLs) *corresponding to respective locations of the multimedia content at one or more second cloud servers of a streaming content service* (e.g., web sites audio sources that provide the audio device content to stream).

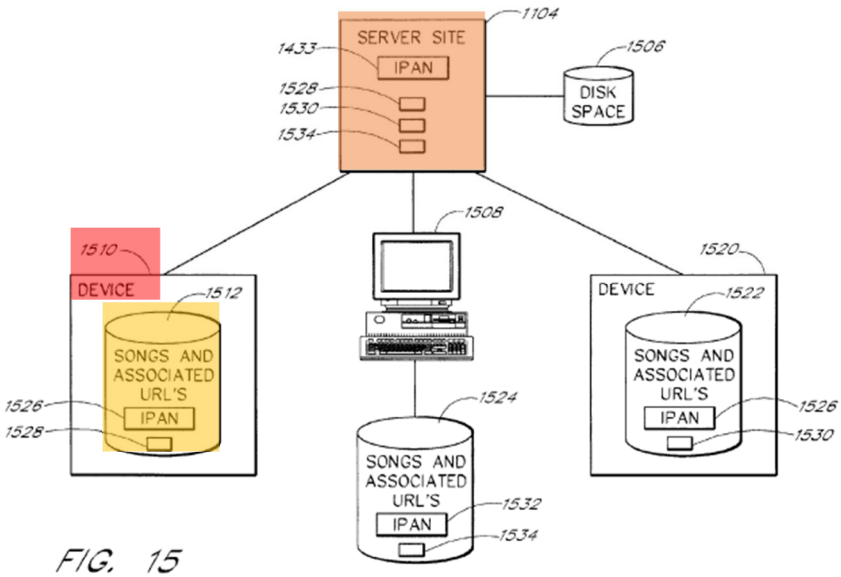


FIG. 15

97. First, a POSA would, in my opinion, understand that Qureshey's IPAN server 1104 is a *first cloud server* and Qureshey's audio sources 630-632 constitute *second cloud servers of a streaming content service*. Both the IPAN server 1104 and audio sources 630-632 constitute cloud servers because, in my opinion, they are remote computing systems that are accessed over the Internet. Qureshey, 3:34-39, 16:56-60 ("The PC IPAN client 1106 connects to the IPAN Server 1104 through the network 1102 (such as the Internet.)"), 14:32-47 ("The Internet provides the ability to transfer data between any two of the sites 602, 630-632 … the intelligent radio 100 makes a "direct" connection to the selected site."), 16:29-31 ("the intelligent radio … is a network-enabled audio device"), Figs. 11, 15, 6B; Ex-1010 at 37:12-24. Further, audio sources 630-632 are part of a "Web Radio site 602 (e.g., www.webradio.com), which provides a service for streaming "Web radio broadcast stations" and other "streaming audio programming." Qureshey, 13:8-27, 14:32-47.

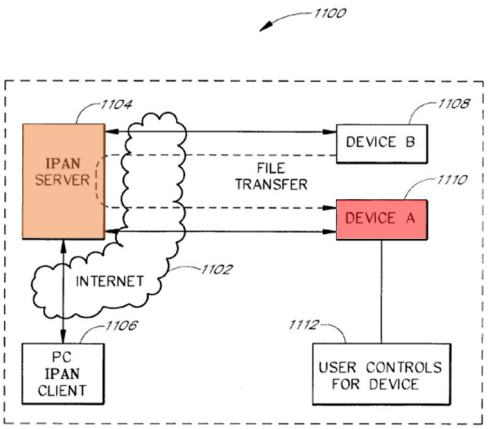


FIG. 11

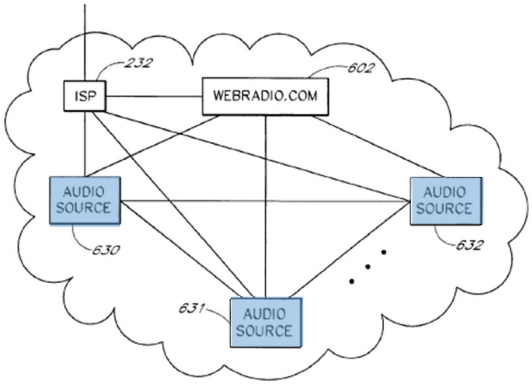


FIG. 6B

98. Second, it is my opinion that Qureshey discloses causing one or more first cloud servers to add multimedia content to a local playback queue on the particular playback device, wherein adding the multimedia content to the local playback queue comprises the one or more first cloud servers adding, to the local playback queue, one or more resource locators corresponding to respective locations of the multimedia content. A POSA would, in my opinion, understand that Qureshey discloses a synchronization procedure that causes an IPAN cloud server to add an updated playlist to the storage space 1512 of a network-enabled audio device, wherein the updated playlist includes a list of audio files and Uniform Resource Locators (URLs) associated with the location of the audio files in the playlist. *Id.*, 24:26-30 ("the user presses the synchronize button 1718 so that the next time the device 1200 or 1300 connects, an updated playlist will be downloaded"), 21:62-65 ("Each network enabled audio device 1510 has storage space 1512 for a playlist 1528, which is a list of audio files and associated URL's of where the audio files were retrieved from"), 22:48-58 ("Within the playlist, the URL's indicate the location from which the audio files associated with the song titles in the playlist can be downloaded"), 3:46-47, 14:32-47, 7:55-58, Claim 43, Figs. 11, 15, 6B.

99. Third, a POSA would further understand that a device contains a local playback queue that includes a playlist with URLs in sequence where each is

associated with an audio file, and therefore is a certain list of media (e.g., a playlist of songs for playback) stored within the storage space 1512. The locally stored list of URLs is used for retrieval of songs and playback of the list of songs in the particular sequence (as provided by the list). Qureshey, 21:62-67 ("Each network enabled audio device 1510 has storage space 1512 for a playlist 1528, which is a list of audio files and associated URL's."), 21:43-46 ("Each network-enabled audio device 1510 has a storage space 1512 for network-enabled audio device IPAN software 1526, a playlist 1528, and associated URL's and songs within the playlist."); Ex-1010 at 131:10-25 (Sonos' expert explaining that a queue is a "a container that can hold items media items such as a URL to a song"). Qureshey explains that the network-enabled audio device 1510 uses the URLs to obtain a plurality of songs from a remote source and plays the songs in the particular sequence, as provided by the list of songs that is part of the stored playlist. *Id.*, 28:11-43 ("the first device 1510 will download the songs from the URLs provided to it by server site IPAN 1433"); 35:33-67 (noting that, after obtaining the songs from the remote source, the device "play[s] the audio content [as] indicated by the playlist."). A POSA would also understand that Qureshey further supports this understanding because it discloses storing songs arranged in sequence in the storage space 1512 because it shows that the networked-enabled audio device was designed to playback songs in a sequence.

100. Thus, in my opinion, the IPAN server adding an updated playlist to the storage space 1512 results in adding URLs corresponding to locations of the new audio files in the updated playlist.

101. Fourth, it is my opinion that a POSA would have modified Al-Shaykh's system to include features from Qureshey's system. Specifically, Al-Shaykh's rendering devices would incorporate Qureshey's storage space 1512 within a networked-enabled device and Al-Shaykh's system would incorporate Qureshey's first cloud server (i.e., the IPAN server).[2] Thus, a POSA would understand that, in the combined Al-Shaykh-Qureshey system, when a set of inputs to transfer playback from the mobile device to the particular rendering device is detected, as disclosed in Al-Shaykh, then the system would cause a first cloud server (i.e., Qureshey's IPAN server) to add URLs associated with the locations of the audio files to the storage space 1512 (as disclosed in Qureshey) in Al-Shaykh's rendering devices.

[2] Both Al-Shaykh and Qureshey disclose "one or more second cloud servers of a streaming content service" and, thus, Qureshey's second cloud server (i.e., audio sources 630-632) do not need to be incorporated into the Al-Shaykh-Qureshey combination. However, this similarity is another reason that a POSA would modify Al-Shaykh with Qureshey.

102. Fifth, it is my opinion that a POSA would have been motivated to combine Al-Shaykh and Qureshey for reasons stated in Section X.A.1. Additionally, a POSA would have been motivated to incorporate the back-end server functionality that enables a rendering device to directly retrieve content from the Internet to play back, as taught by Qureshey, into Al-Shaykh's system, to the extent that Al-Shaykh does not disclose this functionality. Qureshey, 3:34-39, 16:56-60, 14:32-47, 16:29-32, 13:8-27, Figs. 11, 15, 6B; Al-Shaykh, [0094], [0097], [0015]; *infra* Section X.A.2.i. Al-Shaykh's rendering devices can directly retrieve media content from a remote server for playback but Al-Shaykh does not explain the details on the back-end functionality that facilitates this transaction. *See supra* Section X.A.1. Thus, it is my opinion that a POSA would have looked to similar references in the art for further disclosures of networked playback systems to determine how playback devices within the systems are able to directly retrieve content from remote sources, and, thus, a POSA would have found it obvious to combine Al-Shaykh and Qureshey in this way.

103. Moreover, it is my opinion that a POSA would have been motived to implement Qureshey's back-end server functionality to improve the system by preventing any disconnection or failure of a mobile control device to impact ongoing playback on the rendering device. That is, a POSA would understand that the added functionality enables storage of URLs on the rendering device such that

the rendering device can retrieve the content to be played back without assistance from the mobile control device. It is my opinion that a POSA would recognize that such a combination would vastly improve the user experience by minimizing playback stoppages at the rendering device.

g. Element [1-g]

i. Al-Shaykh and Qureshey

104. It is my opinion that Al-Shaykh discloses transferring playback from the control device to the particular playback device further comprising causing playback at the control device to be stopped (e.g., enabling transfer of media content to rendering device stops playback at the mobile device). Al-Shaykh, [0100], [0053], [0093], [0156-57], [0166-67], [0173-74].

105. As explained in Section X.A.2.e, Al-Shaykh discloses transferring playback from the control device to the particular playback device. Further, a POSA would understand that transferring playback "enable[s] a user to use the mobile device to start and stop external rendering of the media content currently selected in a media application executed by the mobile device." *Id.*, [0053]. Specifically, a POSA would, in my opinion, recognize that invoking media transfer control 51 or control/indication element 71 (as explained in Section X.A.2.c) enables or disables the transfer of media content to the rendering device. *Id.*, [0100]. Al-Shaykh explicitly notes that disabling causes "the target rendering

device [to] stop rendering the media content 15." *Id.* Thus, it is my opinion that a POSA would understand that enabling the transfer of media content to the rendering device would cause the mobile to stop playback.

106. Additionally, it is my opinion that Al-Shaykh discloses the functionality required to stop playback at the mobile device when playback is transferred to the particular rendering device. Specifically, a POSA would recognize that Al-Shaykh discloses transferring playback from an initial rendering device to a new rendering device. *Id.*, [0156-57], [0166-67], [0173-74]. When transfer occurs, "rendering of the music content on the initial target rendering device may be stopped, and … the rendering of music content on the new target rendering device may begin." Similarly, when rendering from the mobile device is transferred to the target rendering device, the rendering at the mobile device is stopped. *Id.*, [0174], [0157] (the user may transfer playback back from the rendering device to the mobile device by invoking the media transfer control 51 or control/indication element 71 a second time). Thus, a POSA, in my opinion, would find Al-Shaykh renders obvious that a mobile device stops playback when playback is transferred to the particular rendering device.

ii. Phillips Also Discloses Element [1-g] (Ground II)

(a) Phillips

107. U.S. Patent No. 8,799,496 (Ex-1006, "Phillips") was published on May 10, 2012, and filed on July 19, 2010, and claims priority to provisional application no. 61/227,189, filed on July 21, 2009.

108. Phillips generally describes its invention as related "to transferring display of video content from one device to another." Phillips, 1:14-15. Similar to Al-Shaykh, Phillips discloses a networked playback system that enables "transferring video display between video playback devices" such as from a "mobile device" to a "desired renderer." *Id.*, Abstract, Fig. 1.

109. Phillips also discloses "media controllers" that are "devices that operate as sources of video content within the system," and "renderers" that are "devices that operate to provide playback or rendering from the media controllers." *Id*., 3:18-43. The playback of video content is implemented by streaming video from the media controllers to the renderers. *Id*., 3:46-61. Alternatively, the video content can be implemented by streaming video content from a media broker (that is software hosted on a separate device from the media controllers and renderers) to the renderers. *Id*., 3:46-49, 3:62-66. The media broker also maintains the locations of all local video content in a "merged guide" that can be requested by a renderer. *Id*., 5:7-19. The media broker also identifies the location of a specific video content (using, for example, an IP address) when requested by a renderer. *Id*., 5:22-44.

110. According to Phillips, the transfer of video content is initiated by a user of a mobile device, which causes the mobile device to send a "transfer request" to a media broker that selects a desired renderer and returns the address of the renderer to the mobile device, whereupon the mobile device sends a content request to a media controller to stream video content to the selected renderer. *Id.*, 9:12-10:61, 11:3-12:4, Fig. 7.

111. Further, Phillips discloses a user that utilizes the mobile device's GUI to playback content on the device or initiate the playback transfer to a desired rendering device. *Id.*, 3:40-60, Fig. 3. Once transfer is accomplished, playback at the mobile device is "terminated" and the renderer is able to request and retrieve content for playback from remote sources, such as "Internet-based streaming video services (e.g., Hulu, Netflix, CBS.com, or the like)." *Id.*, 3:18-61, 7:28:42, 11:19-33.

(b) Element [1-g]

112. To the extent Patent Owner disagrees that Al-Shaykh and Qureshey (Ground I) teaches this limitation, it is my opinion that Phillips also discloses this limitation.

113. In my opinion, Phillips discloses causing playback at the control device to be stopped. Specifically, a POSA would recognize that Phillips discloses transferring content from a "mobile device 20" to a "desired renderer 14" and,

"once transfer is complete, display of the video content at the mobile device 20 is terminated." *Id.*, 10:48-61, 7:28:42.

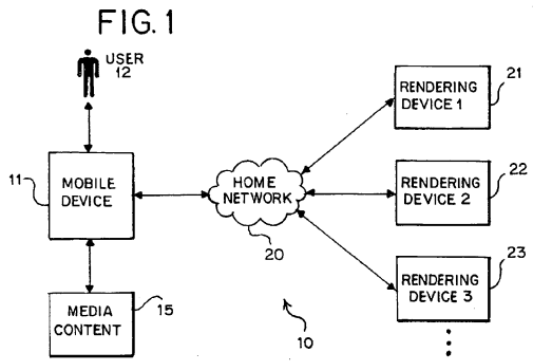
114. Further, as discussed above in Section X.A.2.e, it is my opinion that Al-Shaykh discloses transferring playback to a particular rendering device. Further, a POSA would, in my opinion, understand that the teachings of Phillips can be implemented to Al-Shaykh's system when transfer of playback to a particular rendering device is complete. Specifically, a POSA would recognize that, when Al-Shaykh's system completes the transfer of playback to a particular rendering device, it would terminate the display of content at the mobile device, as Phillips teaches.

115. Further, it is my opinion that a POSA would have been motivated to and would have found it obvious to add Phillips's functionality to Al-Shaykh's system for several reasons.

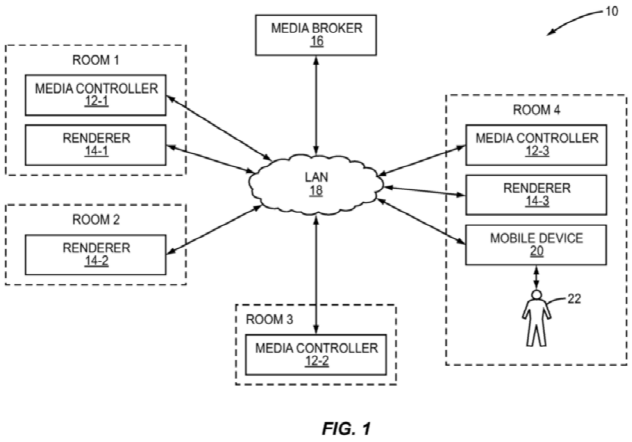
116. A POSA would understand that Al-Shaykh and Phillips are in the same field of endeavor, deal with similar devices, and are directed to solving the same problems in those devices. For example, Phillips generally "relates to transferring display of video content from one device to another" and playback content from the Internet. Phillips, 1:14-15. Similarly, Al-Shaykh discusses "transfer[ing] media content from a mobile device to [rendering devices within] a home network" where the media content is streamed from the internet. Al-Shaykh,

Abstract, [0006], [0082]. Thus, in my opinion, a POSA would recognize that both references enable users to transfer playback to various devices and playback content on those devices from the Internet, which a POSA would further understand to provide much greater accessibility to content than traditional systems that were limited to playback of content locally stored on the network. Phillips, 3:18-42; Al-Shaykh, [0090].

117. Further, a POSA would understand that both references describe networked media playback systems that include a control device and one or more rendering devices. Al-Shaykh, Abstract, [0078], Fig. 1 (showing mobile device 11 and rendering devices 21, 22, 23 in home network 20; Phillips, Fig. 11 (showing renderers 14 and mobile device 20 in a LAN 18). Thus, in my opinion, Al-Shaykh and Phillips involve similar media playback systems that are often used in homes or offices and allow users the flexibility of playing content on various device configurations for different scenarios. Al-Shaykh, [0005] ("the user may render the music content on a high quality stereo in the home instead of being limited to playback using the mobile device."); Phillips, 1:19-34.



Al-Shaykh, Fig. 1



Phillips, Fig. 1

118. Additionally, a POSA would, in my opinion, understand that the references are directed toward solving similar problems. For example, a POSA would recognize that Al-Shaykh and Phillips disclose methods to seamlessly transfer playback of media content from a control device to a playback device without delay and in a manner that the user can still control playback and conduct other tasks from the control device. Phillips, 1:19-34; Al-Shaykh, [0053]. In my opinion, these media playback systems provide a more affordable option that mixes expensive control devices with low-cost rendering devices and improves the user's video watching experience at home by providing the flexibility of seamlessly using the rendering devices. Phillips, 1:19-34; Al-Shaykh, [0004].

119. Additionally, a POSA would, in my opinion, have been motivated to incorporate terminating playback at the mobile device when playback is transferred to rendering device, as taught by Phillips, into Al-Shaykh's system, to the extent

that Al-Shaykh does not disclose this functionality. Phillips, 7:28:42; Al-Shaykh, [0094], [0097], [0015]. For example, a POSA would recognize that Al-Shaykh's system transfers playback to a rendering device and allows the mobile device to control this "external rendering." *See supra* Section X.A.2.g.i. While a POSA would understand this to require playback at the mobile device to stop, to the extent Patent Owner argues otherwise, then a POSA would at least have looked to similar references in the art for further disclosures of networked playback systems to determine what occurs at the mobile device when playback is transferred to a rendering device. And, thus, a POSA would, in my opinion, have found it obvious to combine Al-Shaykh and Phillips in this way. Moreover, a POSA would have been motived to implement this functionality, as described in Phillips, because it improves the system by allowing users to perform other tasks on their mobile phone while playback continues on the rendering device.

120. Based on at least the reasons noted above, it is my opinion that Al-Shaykh and Phillips are analogous art to the '615 patent, and a POSA would have found it obvious to combine them.

h. Element [1-h]

121. It is also my opinion that Al-Shaykh discloses transferring playback from the control device to the particular playback device further comprises (c)

i. Element [1-i]

124. It is also my opinion that Al-Shaykh discloses this limitation. To the extent Patent Owner disagrees, it is my opinion that Qureshey also discloses this limitation.

i. Al-Shaykh

125. It is my opinion that Al-Shaykh discloses causing the particular playback device to play back the multimedia content, wherein the particular playback device playing back the multimedia content comprises the particular playback device retrieving the multimedia content from one or more second cloud servers of a streaming content service and playing back the retrieved multimedia content.

126. A POSA would recognize that Al-Shaykh discloses a "remote content service" that provides devices access to stream media content from the internet using, for example, a "service-specific" or "media" application, Al-Shaykh, [0006], [0082], [0090], and further discloses a "remote content provider" that directly transmits the media content to the devices. *Id.*, [0020]. Thus, a POSA would understand that Al-Shaykh's remote content provider transmitting content accessible from a remote content service would constitute a second cloud server of a streaming content service because Al-Shaykh's system comprises a remote computing system that is accessed over the Internet. Al-Shaykh, [0090] (explaining

that the remote content service may be an "internet radio player"), [0020] (discussing a "remote content provider," which would be part of the remote content service), [0093] (discussing playback of "internet media content" on the rendering devices), [0080] (noting that the home network to which the rendering device are connected to "provide[s] a connection to other networks, such as, for example, the internet"), [0006] (discussing streaming media content form the internet using a media content service and associated service-specific application), [0092] (discussing a media application providing content to a target rendering device), [0095] ("the mobile device 11 may access and/or obtain the media content from a remote content service using a 3G carrier network for use in a media application on the mobile device 11"), Fig. 1.

127. A POSA would further understand that Al-Shaykh discloses causing the particular playback device to play back the multimedia content. Specifically, Al-Shaykh discloses "rendering [] media content on the target rendering device." *Id.*, [0097], [0015] ("indicating to the user of the mobile device that the first target rendering device is rendering the first media content wherein the media transfer indication indicates to the user of the mobile device that the first target rendering device is rendering the first media content.").

128. Additionally, a POSA would also understand that Al-Shaykh discloses wherein the particular playback device playing back the multimedia content

comprises the particular playback device retrieving the multimedia content from one or more second cloud servers of a streaming content service and playing back the retrieved multimedia content. Specifically, a POSA would, in my opinion, understand that Al-Shaykh discloses that the particular rendering device can directly retrieve media content to playback without the media content originating from or flowing through the mobile device 11. Al-Shaykh, [0094]. The media content to be rendered can be stored remotely and "flow" directly to the target rendering device. *Id.*, [0095] (explaining that media content can be obtained from a "remote content service"), [0094] ("the media content … may not flow through the mobile device 11 if the transfer of the media content to a target rendering device is enabled using the set of controls and indications 35.").

ii. Qureshey

129. It is also my opinion that Qureshey also discloses element [1-i]. Specifically, a POSA would understand that Qureshey discloses a networked-enabled audio device (also referred to as an electronic device) that retrieves audio content from a remote source and plays it back. Qureshey, 35:33-36:3 ("where when in a playlist mode of operation, the control system [of the electronic device] is further adapted to: receive the playlist assigned to the electronic device from the central system, the playlist identifying a plurality of songs, wherein ones of the plurality of songs are not stored on the electronic device; receive information from

servers of the streaming content service. Specifically, a POSA would recognize that Qureshey discloses this limitation, as explained in Sections X.A.2.i and X.B.3.

4. Claim 9

150. It is also my opinion that Al-Shaykh and Qureshey (Grounds I and II) disclose detecting a method, wherein causing one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device comprises sending a message to the streaming content service that causes the one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device.

151. In my opinion, Al-Shaykh discloses sending a message to the streaming content service. As explained in Section X.A.2.d, a user provides a set of inputs to transfer playback to the rendering devices. These user inputs are provided on a "service-specific application on the mobile device," which is associated with the "remote [media] content service" disclosed in Al-Shaykh. Al-Shaykh, [0006], [0090], [0095]. Thus, a POSA would recognize that the user inputs result in sending a message to the remote content service that is associated with the service-specific application. Further, as explained in Section X.A.2.f, the inputs cause the one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device in the Al-Shaykh-Qureshey combined system. *See* Sections X.A.1 and X.A.2.f.

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PROFESSIONAL SUMMARY

Harry Bims, PhD, EE, provides expert witness support services for telecommunications-related intellectual property litigation. These services include deposition and court testimony, expert reports, and infringement research, for patent, copyright, and trade secret litigation matters. He has 30+ years of telecommunications industry experience, and holds twenty-two US patents in network architecture and chip design for wireless communications.

EMPLOYMENT HISTORY

12/2001 - 05/2004 **AirFlow Networks, Inc. LLC ● Sunnyvale, California**

Position: *CEO/CTO & Founder*

As the sole founder of the company, created the original business plan, raised venture capital, and hired the core engineering team. Grew the company to 32 people and shipped products for revenue in the US and overseas. Fifteen patents on the core technology have issued. These patents, which relate to wireless network infrastructure based on the 802.11 specification, have been sold to Broadcom.

03/2001 - 12/2001 **Bay Partners LLC ● Cupertino, California**

Position: *Entrepreneur in Residence*

Reported to the partners of this VC firm as a technology expert on a range of wireless and networking subjects. Reviewed business plans and participated in due diligence activities related to several startups seeking funding. Developed a business plan for a startup that builds network infrastructure for 802.11 enterprise networks.

09/1999 - 03/2001 **Symmetry Communications Systems LLC ● San Jose, California**

Position: *Director, Software Architecture*

Reporting to the CEO, responsible for the software architecture of their core

Civil Action No. 14-cv-4666

Location: UNITED STATES DISTRICT COURT FOR THE DISTRICT OF MINNESOTA – Hon. Tony N. Leung

Testifying expert on 3GPP error correction coding, precoding, and modulation.

Expert Report:

None.

Attorneys: For Plaintiff: Fish & Richardson

For Defendant:

Status: Case ongoing

10/2014 – 2/2015 **Client: Alston & Bird (representing Microsoft Corporation)**

Case: Microsoft Corporation. v. IPR Licensing, Inc.

Location: UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE PATENT TRIAL AND APPEAL BOARD

Testifying expert in this IPR proceeding involving cellular technology.

Expert Declarations:

10-16-14 Supplemental Declaration ISO Petition for Inter Partes Review of U. S. Patent No. 8,380,244

Attorneys: For Plaintiff: Alston & Bird LLP

For Defendant:

Status: Case settled

9/2014 – 4/2015 **Client: Reed & Scardino, LLP (representing Mobile Telecommunications Technologies, LLC)**

Case: Mobile Telecommunications Technologies LLC v. Amazon.com, Inc.

Civil Action No. 2:13-CV-883-JRG-RSP

Location: UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF TEXAS MARSHALL DIVISION – Hon. Roy S. Payne

Testifying expert in this patent case involving package delivery notification systems.

Expert Reports:

US008799496B2

(12) **United States Patent**
Phillips et al.

(10) **Patent No.: US 8,799,496 B2**
(45) **Date of Patent: Aug. 5, 2014**

(54) **SYSTEM AND METHOD FOR VIDEO DISPLAY TRANSFER BETWEEN VIDEO PLAYBACK DEVICES**

(75) Inventors: **Andrew V. Phillips**, Raleigh, NC (US); **Scott Curtis**, Durham, NC (US)

(73) Assignee: **Eloy Technology, LLC**, Wilmington, DE (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 778 days.

(21) Appl. No.: **12/838,532**

(22) Filed: **Jul. 19, 2010**

(65) **Prior Publication Data**

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Related U.S. Application Data

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(51) **Int. Cl.**

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H04W 36/00	(2009.01)
H04W 36/36	(2009.01)
H04N 1/327	(2006.01)

(52) **U.S. Cl.**

CPC ***H04W 36/36*** (2013.01); ***H04N 1/32767*** (2013.01)

USPC **709/231**; 455/439

(58) **Field of Classification Search**

USPC 709/231; 455/440

See application file for complete search history.

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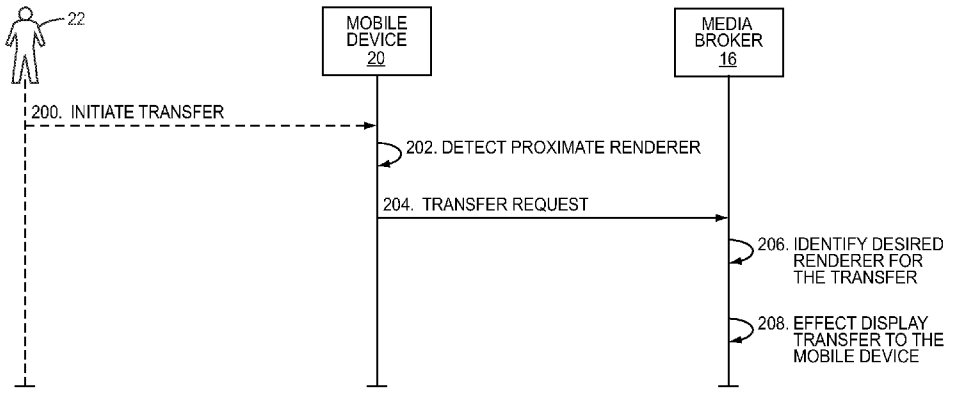
Primary Examiner — Shirley Zhang

(57) **ABSTRACT**

Systems and methods are disclosed for transferring video display between video playback devices. In one embodiment, a mobile, or handheld, device receives user input that initiates transfer of display of video content to the mobile device from a desired renderer located proximate to the mobile device. The mobile device then causes transfer of display of the video content to the mobile device from the desired renderer. In another embodiment, a mobile, or handheld, device receives user input that initiates transfer of display of video content from the mobile device to a desired renderer located proximate to the mobile device. The mobile device then causes transfer of display of the video content from the mobile device to the desired renderer.

22 Claims, 12 Drawing Sheets



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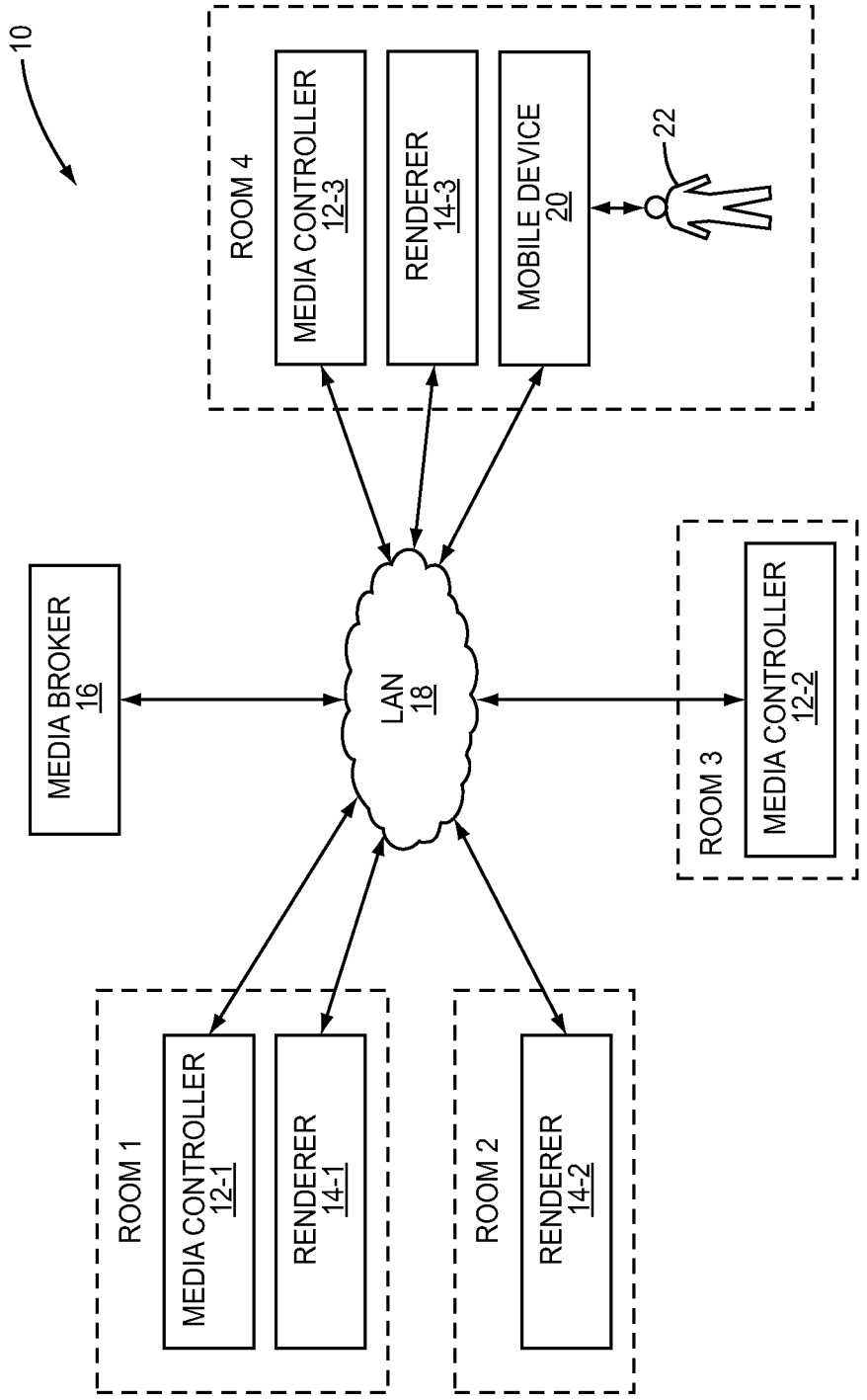
10
ROOM 4
MEDIA CONTROLLER 12-3
RENDERER 14-3
MOBILE DEVICE 20
22
MEDIA BROKER 16
LAN 18
ROOM 3
MEDIA CONTROLLER 12-2
ROOM 1
MEDIA CONTROLLER 12-1
RENDERER 14-1
ROOM 2
RENDERER 14-2

FIG. 1

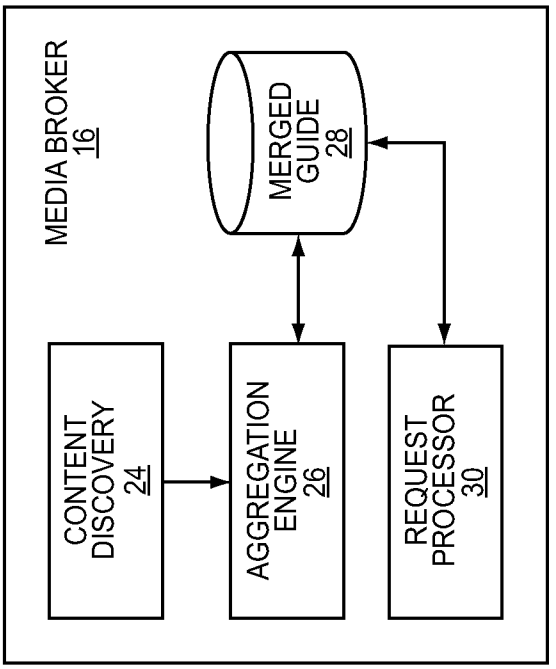
MEDIA BROKER
16
MERGED GUIDE
28
CONTENT DISCOVERY
24
AGGREGATION ENGINE
26
REQUEST PROCESSOR
30

FIG. 2

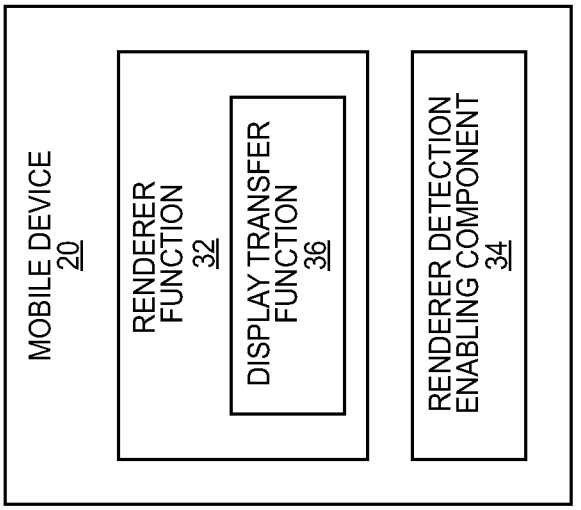
MOBILE DEVICE
20
RENDERER
FUNCTION
32
DISPLAY TRANSFER
FUNCTION
36
RENDERER DETECTION
ENABLING COMPONENT
34

FIG. 3

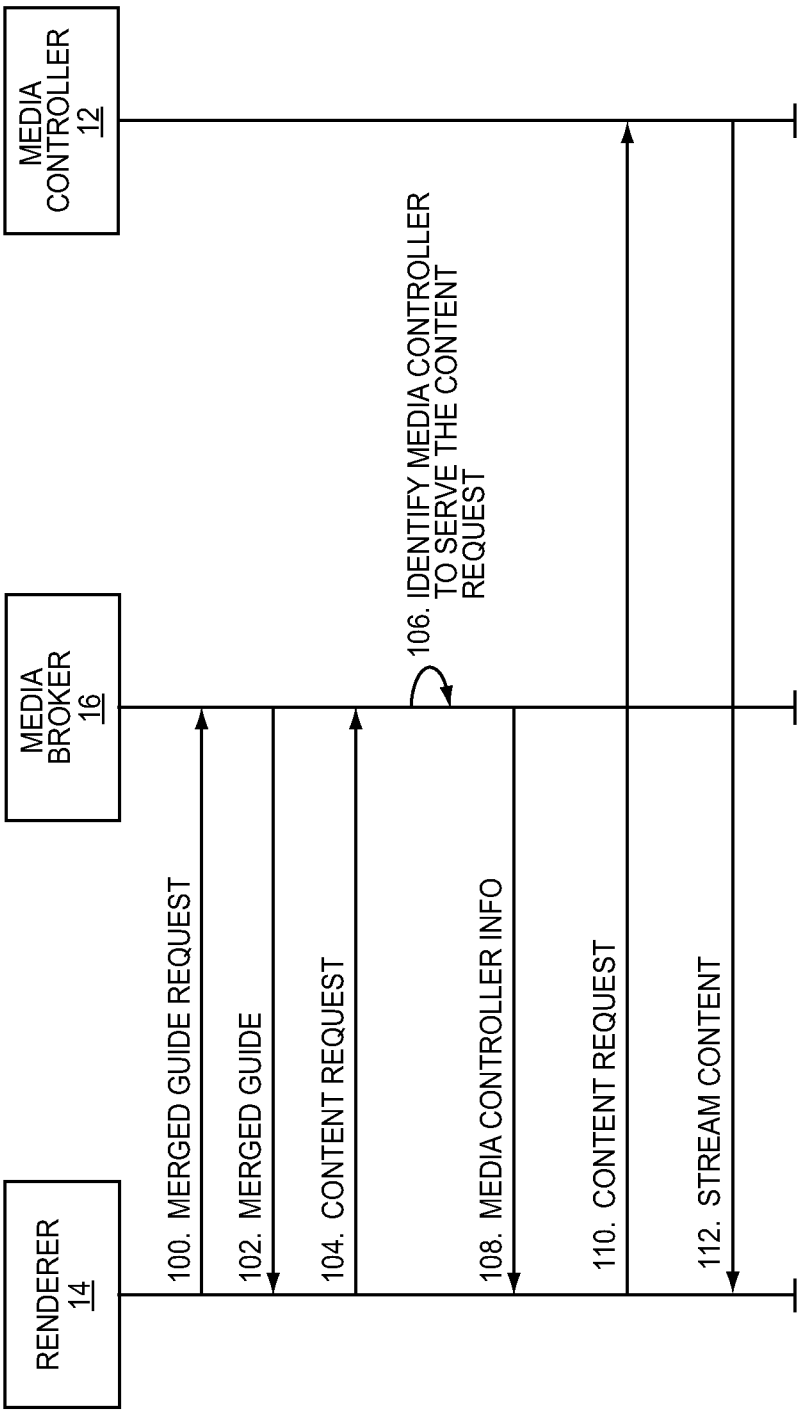
MEDIA CONTROLLER 12
MEDIA BROKER 16
RENDERER 14
100. MERGED GUIDE REQUEST
102. MERGED GUIDE
104. CONTENT REQUEST
106. IDENTIFY MEDIA CONTROLLER TO SERVE THE CONTENT REQUEST
108. MEDIA CONTROLLER INFO
110. CONTENT REQUEST
112. STREAM CONTENT

FIG. 4

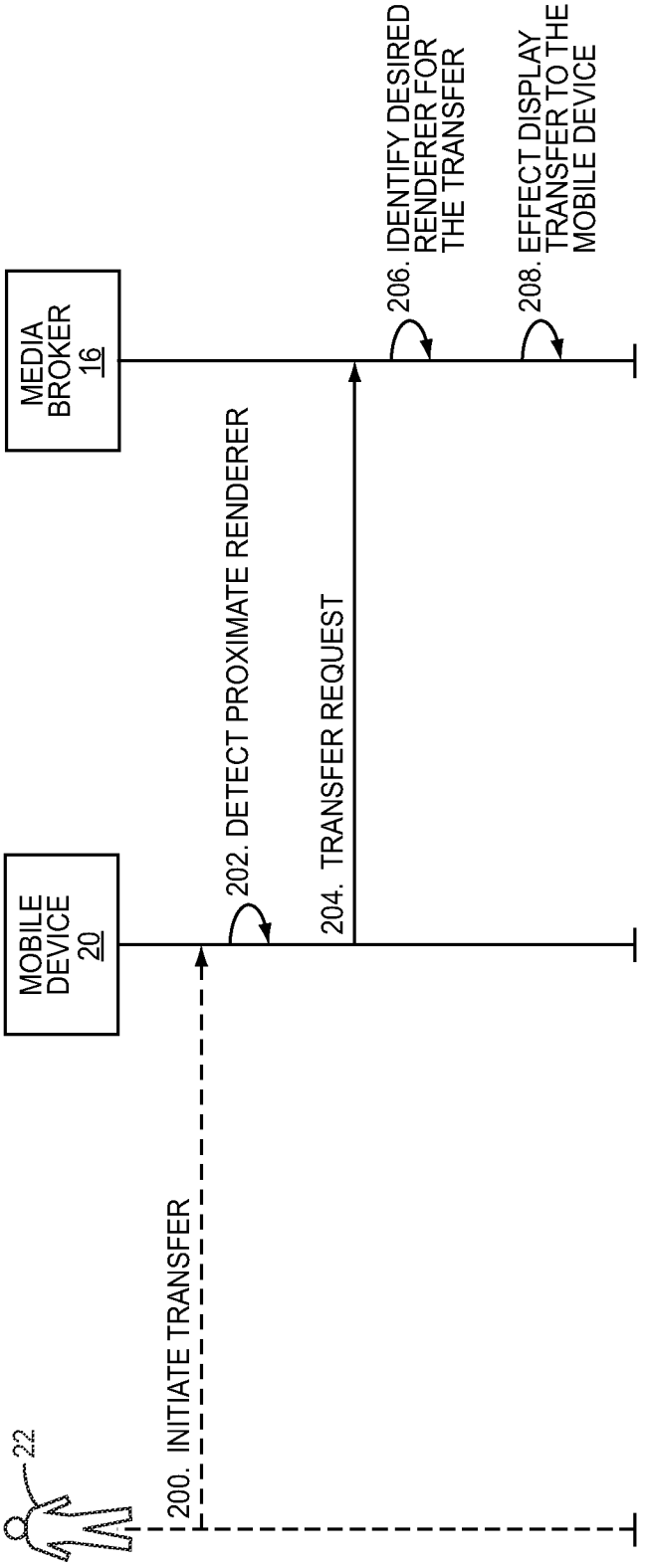
MEDIA BROKER 16
MOBILE DEVICE 20
22
200. INITIATE TRANSFER
202. DETECT PROXIMATE RENDERER
204. TRANSFER REQUEST
206. IDENTIFY DESIRED RENDERER FOR THE TRANSFER
208. EFFECT DISPLAY TRANSFER TO THE MOBILE DEVICE

FIG. 5

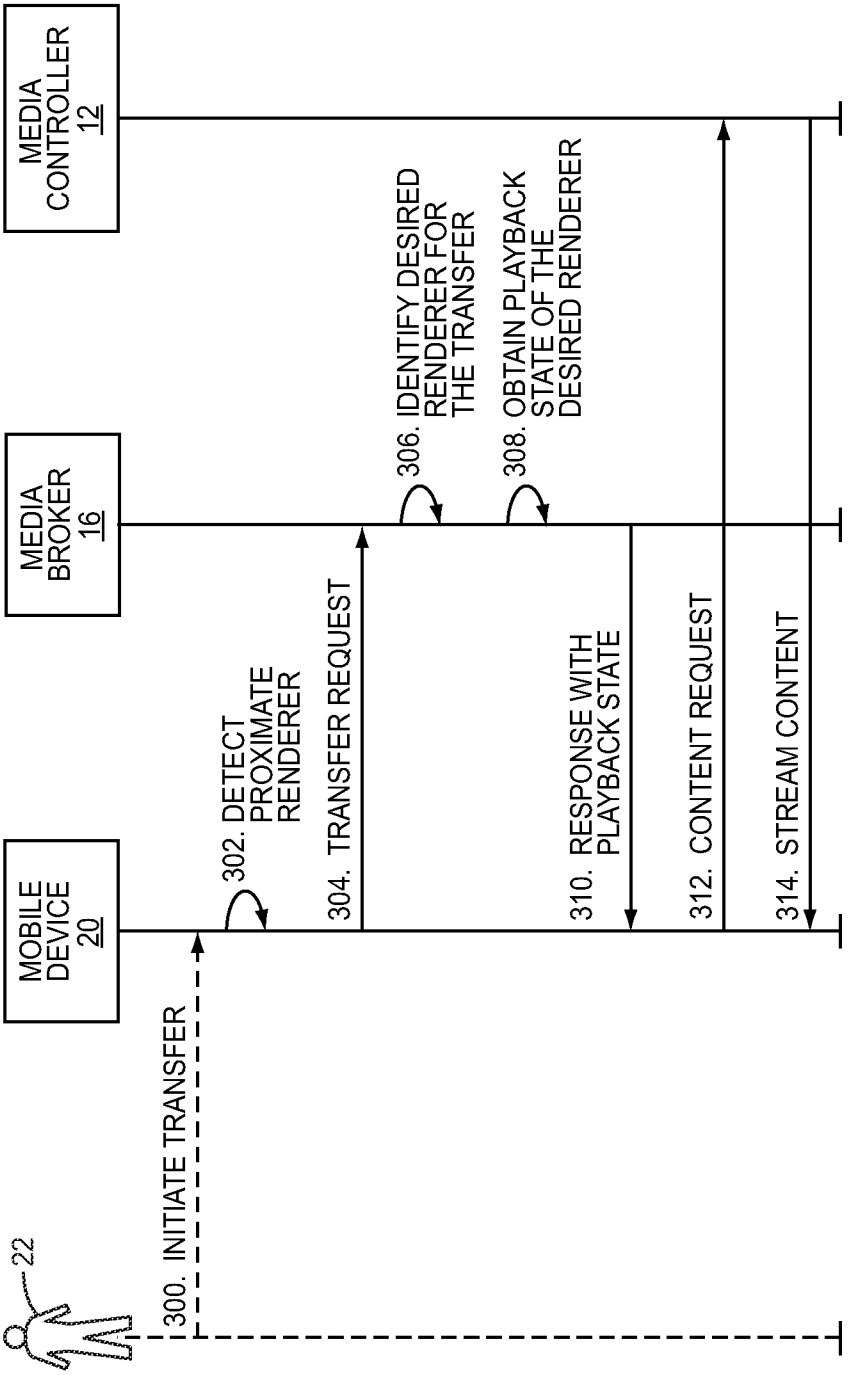
MEDIA CONTROLLER 12
MEDIA BROKER 16
MOBILE DEVICE 20
22
300. INITIATE TRANSFER
302. DETECT PROXIMATE RENDERER
304. TRANSFER REQUEST
306. IDENTIFY DESIRED RENDERER FOR THE TRANSFER
308. OBTAIN PLAYBACK STATE OF THE DESIRED RENDERER
310. RESPONSE WITH PLAYBACK STATE
312. CONTENT REQUEST
314. STREAM CONTENT

FIG. 6

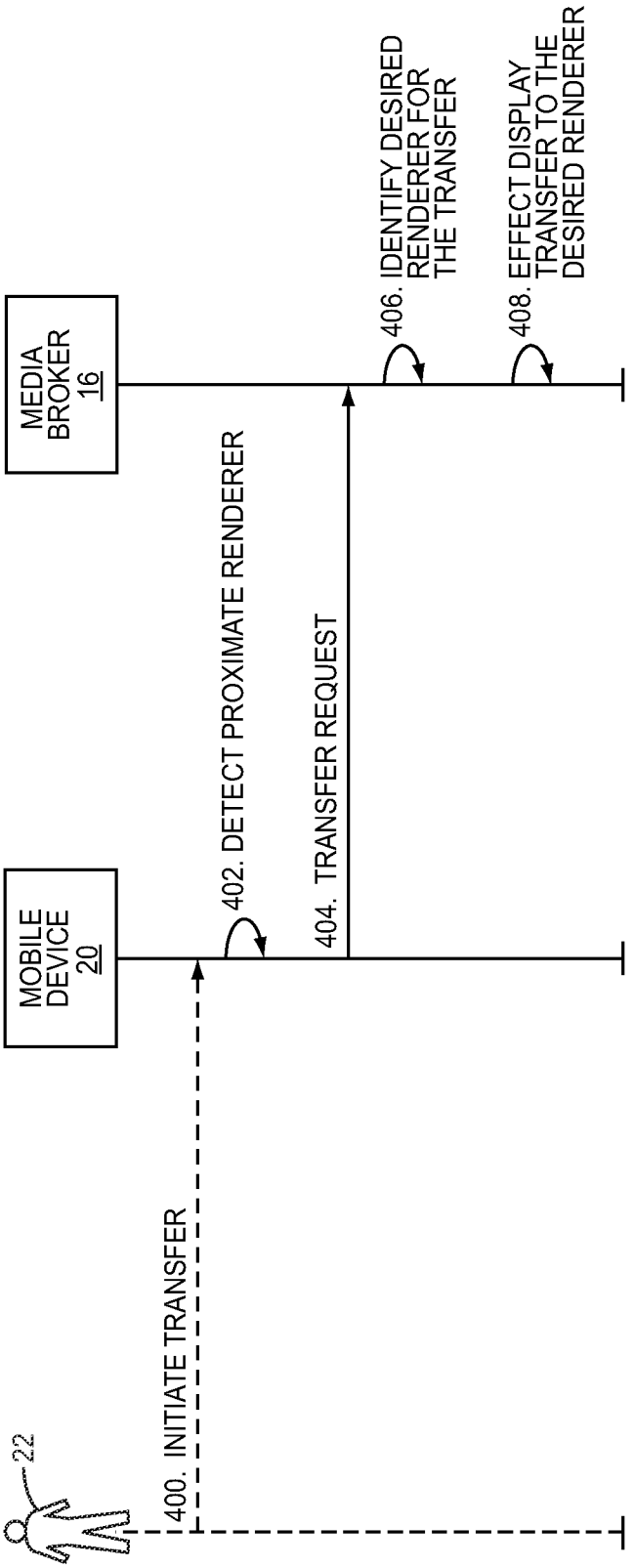
MEDIA BROKER 16
MOBILE DEVICE 20
22
400. INITIATE TRANSFER
402. DETECT PROXIMATE RENDERER
404. TRANSFER REQUEST
406. IDENTIFY DESIRED RENDERER FOR THE TRANSFER
408. EFFECT DISPLAY TRANSFER TO THE DESIRED RENDERER

FIG. 7

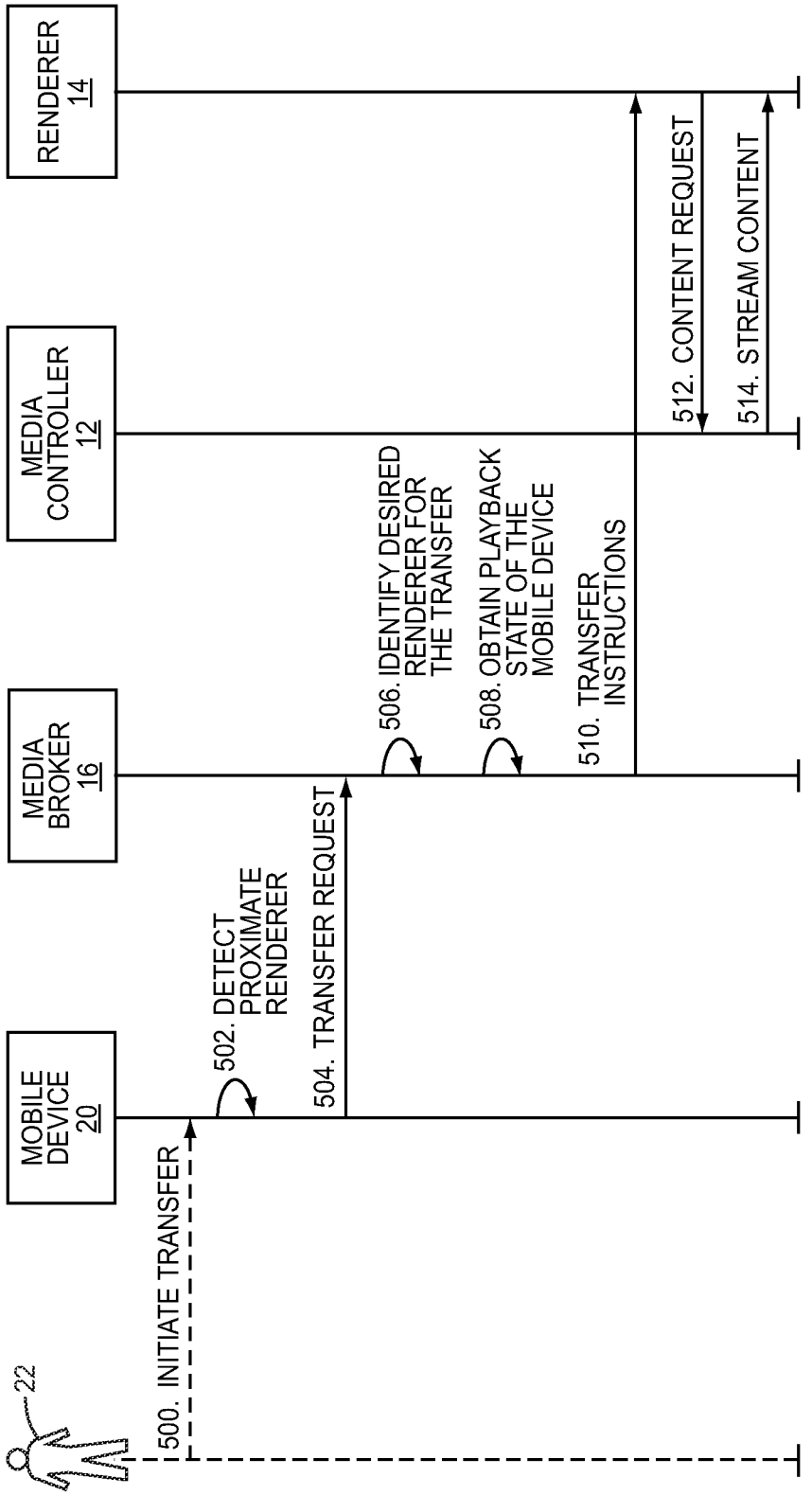
RENDERER 14
MEDIA CONTROLLER 12
MEDIA BROKER 16
MOBILE DEVICE 20
22
500. INITIATE TRANSFER
502. DETECT PROXIMATE RENDERER
504. TRANSFER REQUEST
506. IDENTIFY DESIRED RENDERER FOR THE TRANSFER
508. OBTAIN PLAYBACK STATE OF THE MOBILE DEVICE
510. TRANSFER INSTRUCTIONS
512. CONTENT REQUEST
514. STREAM CONTENT

FIG. 8

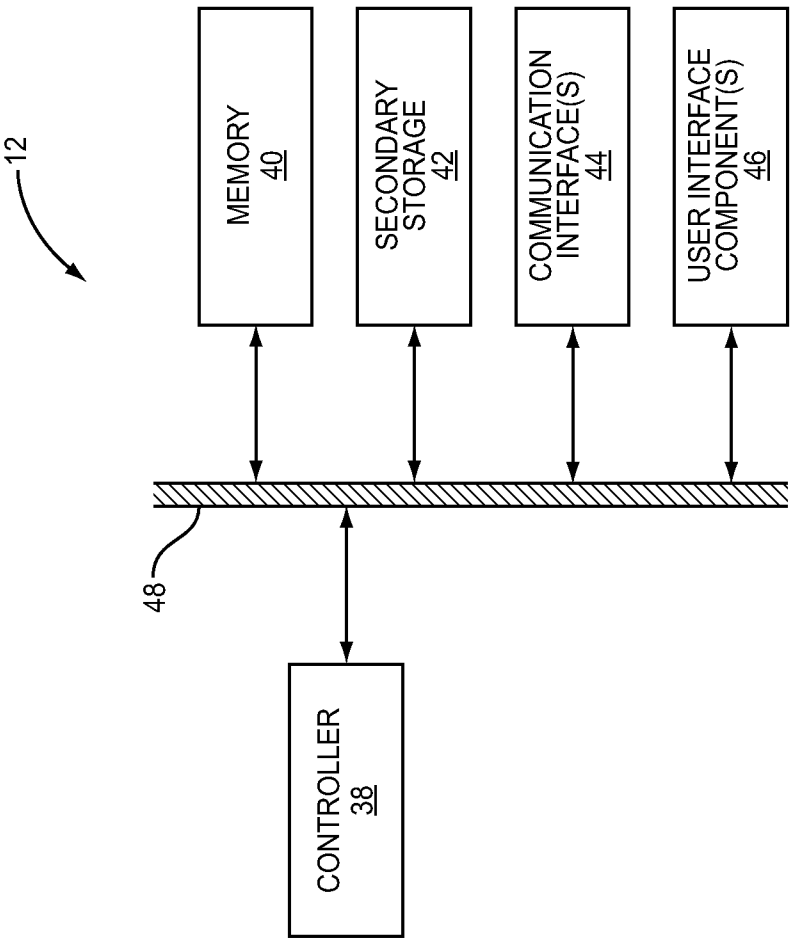
12
MEMORY
40
SECONDARY STORAGE
42
COMMUNICATION INTERFACE(S)
44
USER INTERFACE COMPONENT(S)
46
48
CONTROLLER
38

FIG. 9

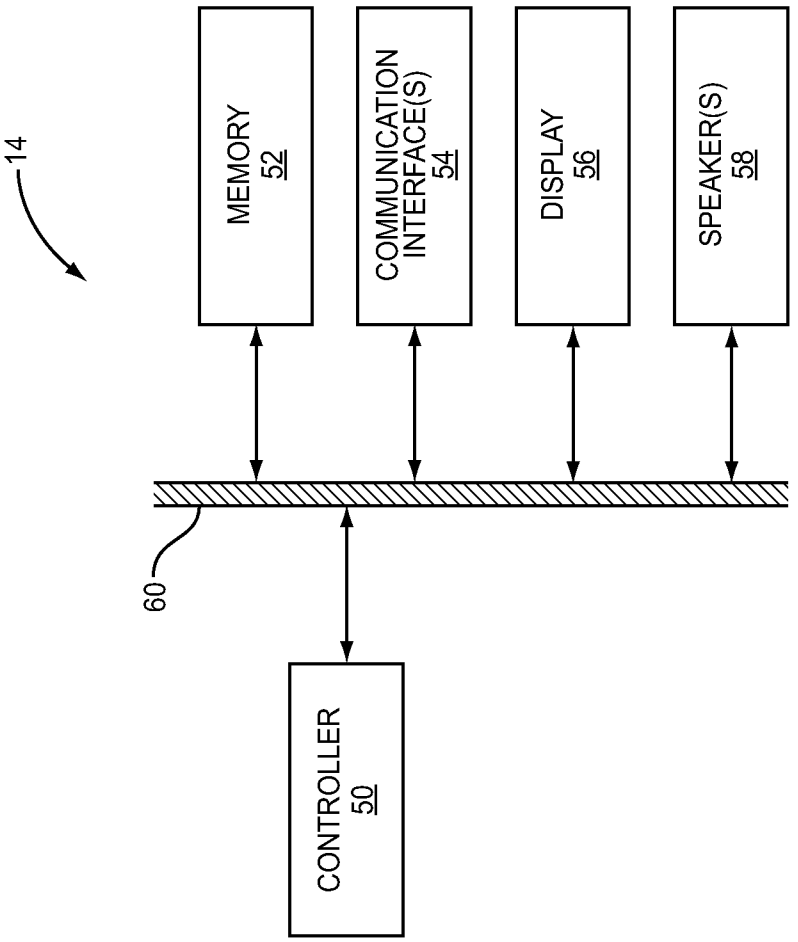
14
MEMORY
52
COMMUNICATION
INTERFACE(S)
54
DISPLAY
56
SPEAKER(S)
58
60
CONTROLLER
50

FIG. 10

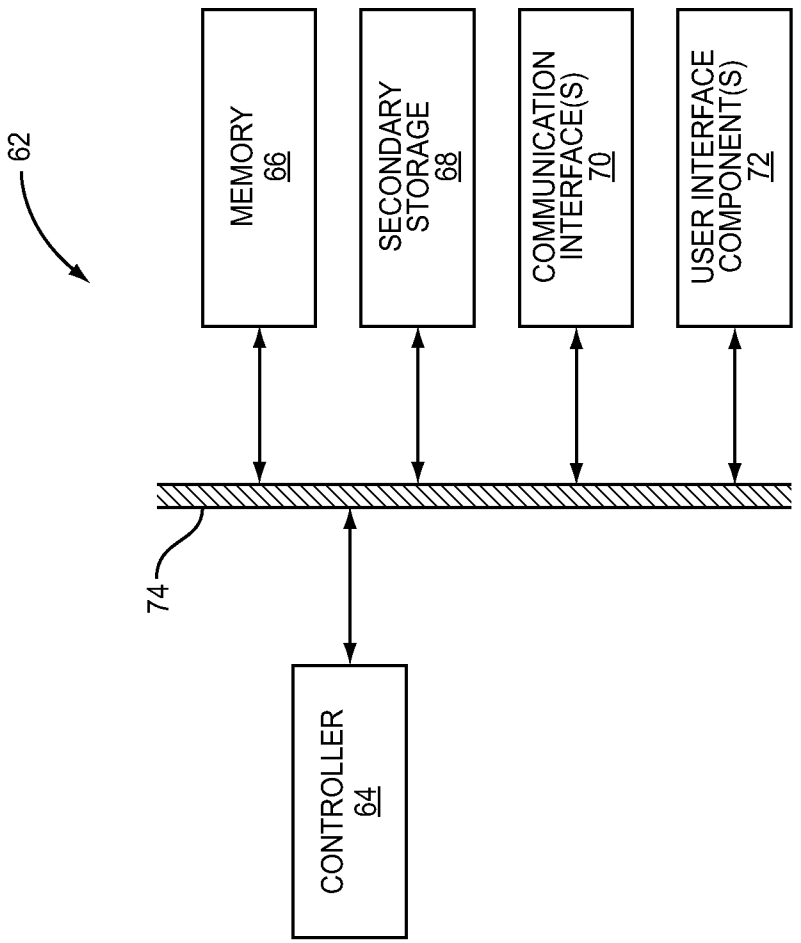
62
MEMORY
66
SECONDARY STORAGE
68
COMMUNICATION INTERFACE(S)
70
USER INTERFACE COMPONENT(S)
72
74
CONTROLLER
64

FIG. 11

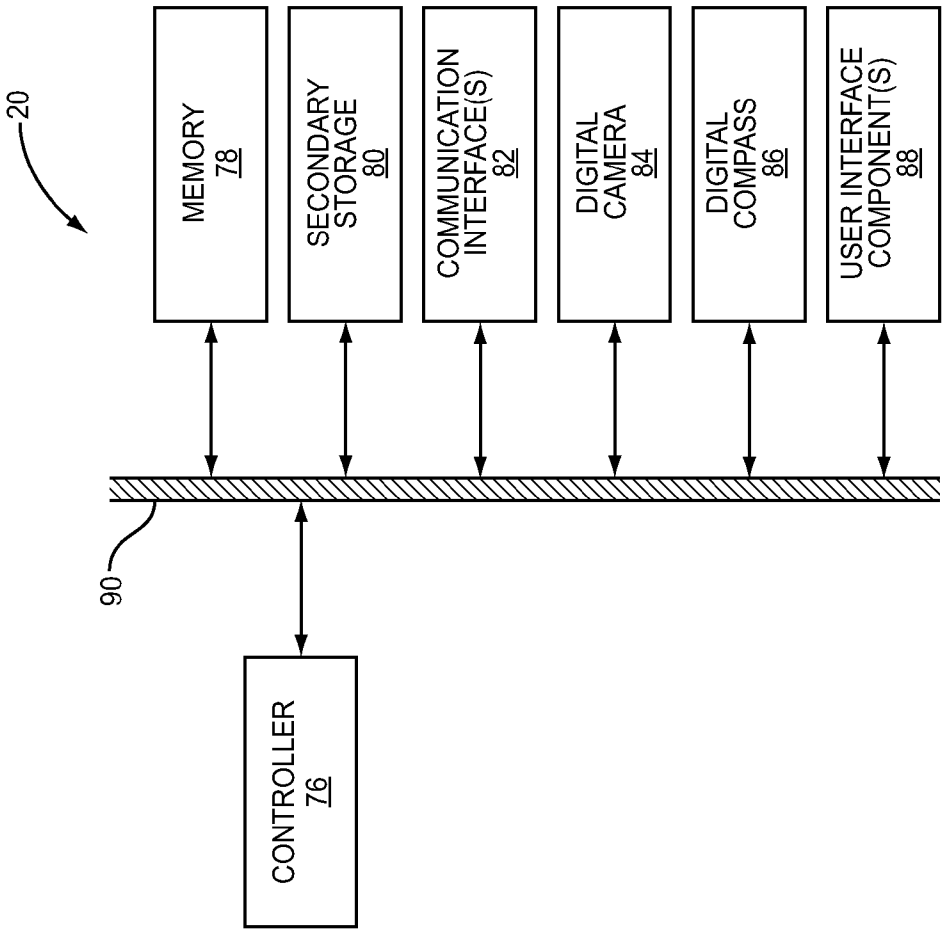
20
MEMORY 78
SECONDARY STORAGE 80
COMMUNICATION INTERFACE(S) 82
DIGITAL CAMERA 84
DIGITAL COMPASS 86
USER INTERFACE COMPONENT(S) 88
90
CONTROLLER 76

FIG. 12

SYSTEM AND METHOD FOR VIDEO DISPLAY TRANSFER BETWEEN VIDEO PLAYBACK DEVICES

RELATED APPLICATIONS

This application claims the benefit of provisional patent application Ser. No. 61/227,189, filed Jul. 21, 2009, the disclosure of which is hereby incorporated herein by reference in its entirety.

FIELD OF THE DISCLOSURE

The present disclosure relates to transferring display of video content from one device to another.

BACKGROUND

As mobile devices having media playback capabilities become more prevalent, new opportunities are emerging for how these mobile devices can enhance video watching experiences. For example, services such as Orb Live and Slingbox allow users to remotely view video content, such as live television, from their homes using their mobile devices. However, these services do little to improve the video watching experience while the users are at their own homes. One issue with watching video content using conventional technology found in today's homes is that there is no good way to move video content from one display or renderer in the home to another without any delay in playback or fumbling through menus to pause and shift playback. As such, there is a need for a system and method that improves the video watching experience by enabling a user to quickly and easily transfer display of video content between devices.

SUMMARY

Systems and methods are disclosed for transferring video display between video playback devices. In one embodiment, a mobile, or handheld, device receives user input that initiates transfer of display of video content to the mobile device from a desired renderer located proximate to the mobile device. The mobile device then causes transfer of display of the video content to the mobile device from the desired renderer. Display of the video content at the mobile device begins at a point in playback of the video content that is being displayed at the desired renderer at the time of the transfer. In one embodiment, the mobile device automatically, or programmatically, detects the desired rendering device from which display of the video content is to be transferred.

In another embodiment, a mobile, or handheld, device receives user input that initiates transfer of display of video content from the mobile device to a desired renderer located proximate to the mobile device. The mobile device then causes transfer of display of the video content from the mobile device to the desired renderer. Display of the video content at the desired renderer begins at a point in playback of the video content that is being displayed at the mobile device at the time of the transfer. In one embodiment, the mobile device automatically, or programmatically, detects the desired rendering device to which display of the video content is to be transferred.

Those skilled in the art will appreciate the scope of the present disclosure and realize additional aspects thereof after reading the following detailed description of the preferred embodiments in association with the accompanying drawing figures.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

The accompanying drawing figures incorporated in and forming a part of this specification illustrate several aspects of the disclosure, and together with the description serve to explain the principles of the disclosure.

FIG. **1** illustrates a system for transferring display of video content between a mobile device and a renderer located proximate to the mobile device according to one embodiment of the present disclosure;

FIG. **2** is a functional block diagram of the media broker of FIG. **1** according to one embodiment of the present disclosure;

FIG. **3** is a functional block diagram of the mobile device of FIG. **1** according to one embodiment of the present disclosure;

FIG. **4** illustrates the operation of the system of FIG. **1** to enable display or playback of video content on one of the renderers from one of the media controllers according to one embodiment of the present disclosure;

FIG. **5** illustrates the operation of the system of FIG. **1** to transfer display of video content from a desired renderer to the mobile device according to one embodiment of the present disclosure;

FIG. **6** illustrates the operation of the system of FIG. **1** to transfer display of video content from a desired renderer to the mobile device in more detail according to one embodiment of the present disclosure;

FIG. **7** illustrates the operation of the system of FIG. **1** to transfer display of video content from the mobile device to a desired renderer according to one embodiment of the present disclosure;

FIG. **8** illustrates the operation of the system of FIG. **1** to transfer display of video content from the mobile device to a desired renderer in more detail according to one embodiment of the present disclosure;

FIG. **9** is a block diagram of one of the media controllers of FIG. **1** according to one embodiment of the present disclosure;

FIG. **10** is a block diagram of one of the renderers of FIG. **1** according to one embodiment of the present disclosure;

FIG. **11** is a block diagram of a device hosting the media broker of FIG. **1** according to one embodiment of the present disclosure; and

FIG. **12** is a block diagram of the mobile device of FIG. **1** according to one embodiment of the present disclosure.

DETAILED DESCRIPTION

The embodiments set forth below represent the necessary information to enable those skilled in the art to practice the embodiments and illustrate the best mode of practicing the embodiments. Upon reading the following description in light of the accompanying drawing figures, those skilled in the art will understand the concepts of the disclosure and will recognize applications of these concepts not particularly addressed herein. It should be understood that these concepts and applications fall within the scope of the disclosure and the accompanying claims.

FIG. **1** illustrates a system **10** enabling transfer of video display from one device to another according to one embodiment of the present disclosure. As illustrated, the system **10** includes a number of media controllers **12-1** through **12-3** and renderers **14-1** through **14-3** and a media broker **16** connected via a Local Area Network (LAN) **18**. The LAN **18** is preferably a wireless LAN such as, for example, a WiFi or IEEE

802.11x network, but is not limited thereto. The system **10** also includes a mobile, or handheld, device **20** having an associated user **22**. Note that mobile device and handheld device are used interchangeably herein. In this embodiment, the system **10** is within a person's home, where the media controller **12-1** and the renderer **14-1** are located in a first room of the home, the renderer **14-2** is located in a second room of the home, the media controller **12-2** is located in a third room of the home, and the media controller **12-3** and the renderer **14-3** are located in a fourth room of the home. Note that the media controllers **12-1** through **12-3** are generally referred to herein as media controllers **12**, and a single one of the media controllers **12-1** through **12-3** is generally referred to herein as a media controller **12**. Similarly, the renderers **14-1** through **14-3** are generally referred to herein as renderers **14**, and a single one of the renderers **14-1** through **14-3** is referred to herein as a renderer **14**.

The media controllers **12** are generally devices that operate as sources of video content within the system **10**. Note, however, that the video content sourced by the media controllers **12** within the system **10** may be stored locally at the media controllers **12** or may be obtained from remote sources such as, for example, Internet-based streaming video services (e.g., Hulu, Netflix, CBS.com, or the like) or terrestrial or satellite based television networks. The video content sourced by the media controllers **12** may be, for example, movies, television programs, video clips, home movies, or the like. In one specific embodiment, the media controllers **12** are devices that operate as Digital Living Network Alliance (DLNA) digital media servers. However, the present disclosure is not limited thereto. Exemplary types of media controllers **12** are set-top boxes that have access to live and/or on-demand television content from terrestrial or satellite television networks, personal computers that have access to stored video content and/or Internet-based streaming video content, Digital Video Recorders (DVRs) that have access to stored video content such as, for example, stored television content, Apple TV® devices, gaming consoles (e.g., PlayStation 3®) that have access to Internet based video content (e.g., Netflix streaming video service, Hulu, or CBS.com), network storage devices (e.g., Network Attached Storage (NAS) device), or the like.

The renderers **14** are generally devices that operate to provide playback or rendering from the media controllers **12**. In one embodiment, video content may be streamed from any media controller **12** to any renderer **14** via the LAN **18**. The video content may be streamed directly from the media controller **12** to the renderer **14** or streamed through the media broker **16**. In one specific embodiment, the renderers **14** are devices that operate as DLNA digital media players or digital media renderers. However, the present disclosure is not limited thereto. Exemplary types of renderers **14** are televisions, gaming consoles, set-top boxes, personal computers, or the like. Note that while the media controllers **12** and the renderers **14** are illustrated separately for clarity and ease of discussion, it should be appreciated that a single device may operate as both a media controller **12** and a renderer **14**. For example, a personal computer may operates both as a media controller **12** that operates as a source of video content for the renderers **14** and as a renderer **14** that provides playback or rendering of video content from other media controllers **12**.

The media broker **16** is preferably implemented in software and is hosted either by a separate device in the system **10** or one of the existing devices in the system **10**. For example, the media broker **16** may be hosted by a separate computer within the system **10**. Alternatively, one of the media controllers **12** may be a personal computer, and the media broker **16** may be hosted by that personal computer. As discussed below, in one embodiment, the media broker **16** operates to maintain a merged guide that includes a listing of all of the media content accessible to the media controllers **12** and therefore available for playback or rendering at the renderers **14**. In addition, the media broker **16** operates to manage transfer of display of video content from the mobile device **20** to one of the renderers **14** and/or transfer of display of video content to the mobile device **20** from one of the renderers **14**.

FIG. **2** is a functional block diagram of the media broker **16** according to one embodiment of the present disclosure. As illustrated, the media broker **16** includes a content discovery function **24**, an aggregation engine **26**, a merged guide **28**, and a request processor **30**. The content discovery function **24** discovers video content accessible to the media controllers **12**. While any suitable discovery technique may be used, in one embodiment, the content discovery function **24** queries the media controllers **12** for lists of content accessible to the media controllers **12**. These lists may be referred to herein as local guides of the media controllers **12**. Updates may be obtained from the media controllers **12** as needed (e.g., periodically). In another embodiment, the media controllers **12** proactively send their local guides and corresponding updates to the content discovery function **24**.

The aggregation engine **26** operates to aggregate, or merge, the local guides of the media controllers **12** to form the merged guide **28**. The merged guide **28** may be implemented as, for example, a list of video content items and, for each video content item, a list of media controllers **12** from which the video content item is accessible. In addition, for time restricted video content items such as television content, the merged guide **28** may include timing information that identifies times at which those video content items are accessible to the media controllers **12** (e.g., times at which the video content will be broadcast). The request processor **30** generally operates to serve merged guide and video content requests from the renderers **14** and server display transfer requests from the mobile device **20**, as described below in detail.

FIG. **3** is a functional block diagram of the mobile device **20** of FIG. **1** according to one embodiment of the present disclosure. As illustrated, the mobile device **20** includes a renderer function **32** and a renderer detection enabling component **34**. The renderer function **32** may be implemented in software, hardware, or a combination thereof. In this embodiment, the renderer function **32** enables playback or rendering of video content from the media controllers **12** at the mobile device **20** and, optionally, video content from local storage of the mobile device **20** and/or a remote content source (e.g., an Internet based streaming video source). In addition, the renderer function **32** includes a display transfer function **36**. As discussed below in detail, the display transfer function **36** enables transfer of display of video content to the mobile device **20** from one of the renderers **14** located proximate to the mobile device **20**, which in FIG. **1** is the renderer **14-3**. In addition, the display transfer function **36** enables transfer of display of video content from the mobile device **20** to one of the renderers **14** located proximate to the mobile device **20**, which again in FIG. **1** is the renderer **14-3**.

The renderer detection enabling component **34** may be implemented in software, hardware, or a combination thereof. In general, the renderer detection enabling component **34** enables detection of a desired renderer **14** that is proximate to the mobile device **20** and to which or from which display of video content is to be transferred. As discussed below in detail, the renderer detection enabling component **34** may include a digital camera, a Bluetooth® transceiver, a

Global Positioning System (GPS) receiver, a digital compass, or the like. Using data obtained from the renderer detection enabling component **34** either the display transfer function **36** or the media broker **16** is enabled to identify the desired renderer **14** that is proximate to the mobile device **20** to which or from which display of video content is to be transferred.

FIG. **4** illustrates the operation of the media broker **16** to serve merged guide and video content requests according to one embodiment of the present disclosure. First, one of the renderers **14** sends a merged guide request to the media broker **16** via the LAN **18** (step **100**). In response, the media broker **16** returns the merged guide **28**, or some relevant portion thereof, to the renderer **14** (step **102**). For example, the media broker **16** may obtain a merged list of video content items currently accessible to the media controllers **12** from the merged guide **28** and return this merged list of video content items to the renderer **14** rather than the entire merged guide **28**. While not illustrated, the renderer **14** displays the merged guide **28** to an associated user, and the associated user is enabled to select a desired video content item for rendering at the renderer **14**. In response to receiving the selection from the associated user, the renderer **14** sends a content request for the desired video content item to the media broker **16** (step **104**).

The media broker **16** then identifies one of the media controllers **12** that can serve the content request (step **106**). Specifically, the media controller **12** identified to serve the content request is one of the media controllers **12** enabled to source the desired video content item at the time of the content request. The media broker **16** then returns a response to the renderer **14** that includes media controller information for the media controller **12** identified for serving the content request (step **108**). The media controller information includes information that enables the renderer **14** to request the desired video content item from the media controller **12** such as, for example, an Internet Protocol (IP) address of the media controller **12** and any credentials needed to access the media controller **12** (e.g., a password). Next, the renderer **14** sends a content request for the desired video content item to the media controller **12** via the LAN **18** (step **110**). In response, the media controller **12** streams the desired video content item to the renderer **14** (step **112**).

In an alternative embodiment, the merged guide **28**, or portion thereof, returned to the renderer **14** in step **102** may include information identifying the media controllers **12** from which the video content items are accessible. Then, once the desired video content item is selected at the renderer **14**, the renderer **14** may use the information in the merged guide **28** to identify the media controller **12** from which the desired video content item is accessible and then send a request for the desired video content item to that media controller **12**. In this manner, the renderer **14** is not required to contact the media broker **16** to determine which media controller **12** is able to source the desired video content item.

FIG. **5** is a general illustration of the operation of the system **10** of FIG. **1** to provide transfer of display of video content from one of the renderers **14** to the mobile device **20** according to one embodiment of the present disclosure. As illustrated, the user **22** of the mobile device **20** first initiates transfer of display of video content from one of the renderers **14** to the mobile device **20** (step **200**). For example, the display transfer function **36** of the mobile device **20** may present a button or similar mechanism to the user **22** via a graphical user interface displayed at the mobile device **20**. The user **22** may then initiate the display transfer process by selecting the button and, in some embodiments, pointing the mobile device **20** toward the renderer **14** from which display is to be transferred.

Next, the display transfer function **36** of the mobile device **20** detects the renderer **14** located proximate to the mobile device **20** from which display of video content is to be transferred (step **202**). This renderer **14** is also referred to herein as the desired renderer **14**. The detection of the desired renderer **14** is preferably automatic in that detection does not require selection of the desired renderer **14** by the user **22** from a list of renderers **14**. However, the present disclosure is not limited thereto. In one embodiment, the renderer detection enabling component **34** of the mobile device **20** includes a digital camera, and the digital camera is used to capture a digital image of the desired renderer **14**. The desired renderer **14** may then be identified using fiduciary markers in the digital image. As discussed below, this identification process is preferably performed by the media broker **16**, but is not limited thereto. As will be understood by one of ordinary skill in the art, a fiduciary marker is any visual characteristic of the desired renderer **14** that may be used to identify the desired renderer **14** such as, for example, a logo or brand name appearing on the renderer **14**, the dimensions of the renderer **14**, a bar code placed on the renderer **14**, or the like. Other types of fiduciary markers may be used and are within the scope of the present disclosure.

In another embodiment, the renderer detection enabling component **34** of the mobile device **20** includes a Bluetooth® transceiver. In this embodiment, the desired renderer **14** is also equipped with a Bluetooth® transceiver. A Bluetooth® discovery process may then be utilized to obtain an identifier (e.g., a Bluetooth® ID) of the desired renderer **14**. As discussed below, this identifier may then be used by the media broker **16** to identify the desired renderer **14**. If multiple renderers **14** are within the range of the Bluetooth® transceiver, Received Signal Strength Indication (RSSI) or a similar technique may be used by the display transfer function **36** to select the renderer **14** that is closest to the mobile device **20** as the desired renderer **14**. The Bluetooth® ID of the desired renderer **14** may then be sent to the media broker **16** to be used to identify which renderer **14** in the system **10** is the desired renderer **14** for the display transfer, as discussed below. Alternatively, the desired renderer **14** may not necessarily be the closest renderer **14** to the mobile device **20**. In this case, the renderer detection enabling component **34** of the mobile device **20** may also include a digital camera. The user **22** may point the digital camera at the desired renderer **14** when initiating the transfer of display of video content, and the digital camera may be used as a digital range finder to determine an approximate distance between the mobile device **20** and the desired renderer **14**. The approximate distance may then be used in combination with the RSSI values for each renderer **14** within the range of the Bluetooth® transceiver of the mobile device **20** to select the desired renderer **14**. The Bluetooth® ID of the desired renderer **14** may then be sent to the media broker **16** to be used to identify which renderer **14** in the system **10** is the desired renderer **14** for the display transfer, as discussed below.

In yet another embodiment, the renderer detection enabling component **34** of the mobile device **20** includes a GPS receiver and a digital compass. The locations of the renderers **14** are known via, for example, GPS receivers associated with the renderers **14**, manual entry by associated user(s), or the like. When initiating the transfer, the user **22** may point the mobile device **20** at the desired renderer **14**. The

location of the mobile device **20** and the direction that the mobile device **20** is pointing may then be used to identify the desired renderer **14**.

Next, the display transfer function **36** of the mobile device **20** sends a transfer request to the media broker **16** (step **204**) and, in response, the media broker **16** identifies the desired renderer **14** for the transfer request (step **206**). In one embodiment, the transfer request includes a digital image of the desired renderer **14** that was captured by the mobile device **20** in step **202**. The media broker **16** may then use the digital image to determine which of the renderers **14** in the system **10** is the desired renderer **14**. For instance, fiduciary markers may be identified within the digital image and compared to known fiduciary markers of the renderers **14** in the system **10** in order to determine a match. The renderer **14** having fiduciary markers that match those extracted from the digital image is then identified as the desired renderer **14**.

In another embodiment, the transfer request includes a Bluetooth® ID of the desired renderer **14**. As discussed above, using one of the techniques described above, the Bluetooth® ID of the desired renderer **14** may be obtained by the display transfer function **36** and provided to the media broker **16** in the transfer request. The media broker **16** may maintain a record of the Bluetooth® IDs of the renderers **14** in the system **10**. Using this record and the Bluetooth® ID of the desired renderer **14** included in the transfer request, the media broker **16** is enabled to identify which of the renderers **14** in the system **10** is the desired renderer **14**.

Once the desired renderer **14** has been identified, the media broker **16** effects transfer of display of the video content currently being displayed at the desired renderer **14** to the mobile device **20** (step **208**). In one embodiment, once transfer is complete, display of the video content at the desired renderer **14** is terminated. In another embodiment, display of the video content at the desired renderer **14** continues such that the video content is displayed at both the mobile device **20** and the desired renderer **14**. In this case, the video content may be provided to the mobile device **20** and the desired renderer **14** via separate streams such that the mobile device **20** and the desired renderer **14** can independently control display of the video content (e.g., pausing, rewinding, fast-forwarding, etc.).

The manner in which display of the video content is transferred from the desired renderer **14** to the mobile device **20** may vary depending on the particular implementation. One of ordinary skill in the art will readily appreciate numerous ways in which this transfer can be performed upon reading this disclosure. However, for completeness, FIG. **6** illustrates an exemplary embodiment for transferring display of the video content from the desired renderer **14** to the mobile device **20**. As illustrated, the transfer process begins as described above with respect to FIG. **5**. First, the user **22** of the mobile device **20** initiates the transfer (step **300**). In response, the display transfer function **36** of the mobile device **20** detects the desired renderer **14** that is located proximate to the mobile device **20** and from which display of video content is to be transferred to the mobile device **20** (step **302**). The display transfer function **36** of the mobile device **20** then sends a transfer request to the media broker **16** (step **304**). In response, the media broker **16** identifies one of the renderers **14** as the desired renderer **14** for the transfer (step **306**).

In this embodiment, in order to effect transfer of display of the video content from the desired renderer **14** to the mobile device **20**, the media broker **16** obtains a playback state of the desired renderer **14** (step **308**) and sends a response including the playback state of the desired renderer **14** to the mobile device **20** (step **310**). Using the playback state, the display transfer function **36** then sends a content request to a media controller **12** for the video content item starting at a point in playback that corresponds to the point in playback at the desired renderer **14** at the time of the transfer (step **312**). The media controller **12** to which the content request is sent may or may not be the same media controller **12** providing the video content item to the desired renderer **14**, depending on the particular implementation. The media controller **12** then begins streaming the video content item to the mobile device **20** for playback or rendering by the renderer function **32** of the mobile device **20** starting at the point in playback of the video content item being displayed at the desired renderer **14** at the time of the transfer (step **314**). In this manner, display of the video content item is seamlessly transferred from the desired renderer **14** to the mobile device **20**.

More specifically, in one embodiment, the playback state of the desired renderer **14** obtained in step **308** includes information identifying the media controller **12** currently providing the video content to the desired renderer **14** for playback or rendering and information identifying either the desired renderer **14** or the content stream being delivered from the media controller **12** to the desired renderer **14**. The display transfer function **36** of the mobile device **20** may then send the content request to the media controller **12** that is delivering the video content item to the desired renderer **14**, where the content request includes either information identifying the desired renderer **14** or the stream being delivered to the desired renderer **14**. In response, the media controller **12** determines what video content item is being streamed to the desired renderer **14** and begins streaming that video content item to the mobile device **20**. The streaming of the video content item to the mobile device **20** begins at a point in the video content item currently being displayed at the desired renderer **14**.

In another embodiment, the playback state of the desired renderer **14** obtained in step **308** includes information identifying the video content item and the point in playback of the video content item being displayed at the desired renderer **14** at the time of the transfer. In this embodiment, the response sent to the mobile device **20** in step **310** includes both the playback state of the desired renderer **14** as well as information identifying a media controller **12** from which the mobile device **20** can obtain the video content item being displayed on the desired renderer **14**. This media controller **12** may or may not be the same media controller **12** as that delivering the video content item to the desired renderer **14**. The display transfer function **36** of the mobile device **20** then sends a request to the media controller **12** identified in the response received in step **310** for the identified video content item starting at the identified position in playback of the video content item. In response, the media controller **12** begins streaming the video content item to the mobile device **20** starting at the identified position in playback.

Before proceeding, a few variations to the process of FIG. **6** should be noted. In a first alternative embodiment, after obtaining the playback state of the desired renderer **14** in step **308**, the media broker **16** may instruct the media controller **12** to begin streaming the video content item to the mobile device **20**. In this manner, the playback state does not need to be communicated back to the mobile device **20** nor does the mobile device **20** need to request the video content item from the media controller **12**. In a second alternative embodiment, the streaming of the video content item may be through the media broker **16**. More specifically, after step **308**, the media broker **16** may request the video content item from the media controller **12** and then stream the video content item to the mobile device **20**.

It should also be noted that is some implementations, the video content item for which display transfer is requested may already be stored on the mobile device **20** or may otherwise be accessible to the mobile device **20**. In this case, the playback state received by the mobile device **20** in step **310** may include information identifying the video content item and the playback position for the display transfer. The display transfer function **36** may then cause the renderer function **32** to begin playback or rendering of the video content item from the local or remote source starting at the identified playback position.

FIG. **7** is a general illustration of the operation of the system **10** of FIG. **1** to provide transfer of display of video content from the mobile device **20** to one of the renderers **14** according to another embodiment of the present disclosure. As illustrated, the user **22** of the mobile device **20** first initiates transfer of display of video content from the mobile device **20** to one of the renderers **14** (step **400**). For example, the display transfer function **36** of the mobile device **20** may present a button or similar mechanism to the user **22** via a graphical user interface displayed at the mobile device **20**. The user **22** may then initiate the display transfer process by selecting the button and, in some embodiments, pointing the mobile device **20** toward the renderer **14** to which display is to be transferred.

Next, the display transfer function **36** of the mobile device **20** detects the renderer **14** located proximate to the mobile device **20** to which display of video content is to be transferred (step **402**). This renderer **14** is also referred to herein as the desired renderer **14**. The detection of the desired renderer **14** is preferably automatic in that detection does not require selection of the renderer **14** by the user **22** from a list of renderers **14**. However, the present disclosure is not limited thereto. In a manner similar to that described above, in one embodiment, the renderer detection enabling component **34** of the mobile device **20** includes a digital camera, and the digital camera is used to capture a digital image of the desired renderer **14**. The desired renderer **14** may then be identified using fiduciary markers in the digital image. As discussed below, this identification process is preferably performed by the media broker **16**, but is not limited thereto. Again, as will be understood by one of ordinary skill in the art, a fiduciary marker is any visual characteristic of the desired renderer **14** that may be used to identify the desired renderer **14** such as, for example, a logo or brand name appearing on the renderer **14**, the dimensions of the renderer **14**, a bar code placed on the renderer **14**, or the like. Other types of fiduciary markers may be used and are within the scope of the present disclosure.

In another embodiment, the renderer detection enabling component **34** of the mobile device **20** includes a Bluetooth® transceiver. In this embodiment, the desired renderer **14** is also equipped with a Bluetooth® transceiver. A Bluetooth® discovery process may then be utilized to obtain an identifier (e.g., a Bluetooth® ID) of the desired renderer **14**. As discussed below, this identifier may then be used by the media broker **16** to identify the desired renderer **14**. If multiple renderers **14** are within the range of the Bluetooth® transceiver, RSSI or a similar technique may be used by the display transfer function **36** to select the desired renderer **14** that is closest to the mobile device **20**. The Bluetooth® ID of the desired renderer **14** may then be sent to the media broker **16** to be used to identify which renderer **14** in the system **10** is the desired renderer **14** for the display transfer, as discussed below. Alternatively, the desired renderer **14** may not necessarily be the closest renderer **14** to the mobile device **20**. In this case, the renderer detection enabling component **34** of the mobile device **20** may also include a digital camera. The user **22** may point the digital camera at the desired renderer **14** when initiating the transfer of display of video content, and the digital camera may be used as a digital range finder to determine an approximate distance between the mobile device **20** and the desired renderer **14**. The approximate distance may then be used in combination with the RSSI values for each renderer **14** within the range of the Bluetooth® transceiver of the mobile device **20** to select the desired renderer **14**. The Bluetooth® ID of the desired renderer **14** may then be sent to the media broker **16** to be used to identify which renderer **14** in the system **10** is the desired renderer **14** for the display transfer, as discussed below.

In yet another embodiment, the renderer detection enabling component **34** of the mobile device **20** includes a GPS receiver and a digital compass. The locations of the renderers **14** are known via, for example, GPS receivers associated with the renderers **14**, manual entry by associated user(s), or the like. When initiating the transfer, the user **22** may point the mobile device **20** at the desired renderer **14**. The location of the mobile device **20** and the direction that the mobile device **20** is pointing may then be used to identify the desired renderer **14**.

Next, the display transfer function **36** of the mobile device **20** sends a transfer request to the media broker **16** (step **404**) and, in response, the media broker **16** identifies the desired renderer **14** for the transfer request (step **406**). In one embodiment, the transfer request includes a digital image of the desired renderer **14** that was captured by the mobile device **20** in step **402**. The media broker **16** may then use the digital image to determine which of the renderers **14** in the system **10** is the desired renderer **14**. For instance, fiduciary markers may be identified within the digital image and compared to known fiduciary markers of the renderers **14** in the system **10** in order to determine a match. The renderer **14** having fiduciary markers that match those extracted from the digital image is then identified as the desired renderer **14**.

In another embodiment, the transfer request includes a Bluetooth® ID of the desired renderer **14**. As discussed above, using one of the techniques described above, the Bluetooth® ID of the desired renderer **14** may be obtained by the display transfer function **36** and provided to the media broker **16** in the transfer request. The media broker **16** may maintain a record of the Bluetooth® IDs of the renderers **14** in the system **10**. Using this record and the Bluetooth® ID of the desired renderer **14** included in the transfer request, the media broker **16** is enabled to identify which of the renderers **14** in the system **10** is the desired renderer **14**.

Once the desired renderer **14** has been identified, the media broker **16** effects transfer of display of the video content currently being displayed at the mobile device **20** to the desired renderer **14** (step **408**). In one embodiment, once transfer is complete, display of the video content at the mobile device **20** is terminated. In another embodiment, display of the video content at the mobile device **20** continues such that the video content is displayed at both the mobile device **20** and the desired renderer **14**. In this case, the video content may be provided to the mobile device **20** and the desired renderer **14** via separate streams such that the mobile device **20** and the desired renderer **14** can independently control display of the video content (e.g., pausing, rewinding, fast-forwarding, etc.).

The manner in which display of the video content is transferred from the mobile device **20** to the desired renderer **14** may vary depending on the particular implementation. One of ordinary skill in the art will readily appreciate numerous ways in which this transfer can be performed upon reading this disclosure. However, for completeness, FIG. **8** illustrates an

exemplary embodiment for transferring display of the video content from the mobile device **20** to the desired renderer **14**. As illustrated, the transfer process begins as described above with respect to FIG. **7**. First, the user **22** of the mobile device **20** initiates the transfer (step **500**). In response, the display transfer function **36** of the mobile device **20** detects the desired renderer **14** that is located proximate to the mobile device **20** and to which display of video content is to be transferred (step **502**). The display transfer function **36** of the mobile device **20** then sends a transfer request to the media broker **16** (step **504**). In response, the media broker **16** identifies one of the renderers **14** as the desired renderer **14** for the transfer (step **506**).

In this embodiment, in order to effect transfer of display of the video content to the desired renderer **14**, the media broker **16** obtains a playback state of the mobile device **20** (step **508**) and sends transfer instructions including the playback state of the mobile device **20** to the desired renderer **14** (step **510**). Using the playback state, the desired renderer **14** then sends a content request to a media controller **12** for the video content item being rendered at the mobile device **20** starting at a point in playback that corresponds to the point in playback at the mobile device **20** at the time of the transfer (step **512**). The media controller **12** to which the content request is sent may or may not be the same media controller **12**, if any, providing the video content item to the mobile device **20**, depending on the particular implementation. The media controller **12** then begins streaming the video content item to the desired renderer **14** starting at the point in playback of the video content item being displayed at the mobile device **20** at the time of the transfer (step **514**). In this manner, transfer of display of the video content item from the desired renderer **14** to the mobile device **20** is seamless.

More specifically, in one embodiment, the playback state of the mobile device **20** obtained in step **508** includes information identifying the media controller **12** currently providing the video content to the mobile device **20** for playback or rendering and information identifying either the mobile device **20** or the content stream being delivered from the media controller **12** to the mobile device **20**. The desired renderer **14** may then send the content request to the media controller **12** that is delivering the video content item to the mobile device **20**, where the content request includes either information identifying the mobile device **20** or the stream being delivered to the mobile device **20**. In response, the media controller **12** determines what video content item is being streamed to the mobile device **20** or being streamed in the identified stream and begins streaming that video content item to the desired renderer **14**. The streaming of the video content item to the desired renderer **14** begins at a point in the video content item currently being displayed at the mobile device **20**.

In another embodiment, the playback state of the mobile device **20** obtained in step **508** includes information identifying the video content item and the point in playback of the video content item being displayed at the mobile device **20** at the time of the transfer. In this embodiment, the transfer instructions sent to the desired renderer **14** in step **510** includes both the playback state of the mobile device **20** as well as information identifying a media controller **12** from which the desired renderer **14** can obtain the video content item being displayed on the mobile device **20**. This media controller **12** may or may not be the same media controller **12** as that delivering the video content item to the mobile device **20**, if any. The desired renderer **14** then sends a content request to the media controller **12** identified in the response received in step **510** for the identified video content item starting at the identified position in playback of the video content item. In response, the media controller **12** begins streaming the video content item to the desired renderer **14** starting at the identified position in playback.

It should be noted that, in one embodiment, acceptance of the display transfer from one or more users at the desired renderer **14** may be required before completing the transfer of display of the video content from the mobile device **20** to the desired renderer **14**. For example, upon receiving the transfer instructions in step **510**, the desired renderer **14** may present a message to any users currently at the desired renderer **14** asking whether to accept the display transfer. If the users deny the display transfer, then the process ends. If the users accept the display transfer or in some cases if there is no response, then the process proceeds as described above.

Before proceeding, a few variations to the process of FIG. **8** should be noted. In a first alternative embodiment, after obtaining the playback state of the mobile device **20** in step **508**, the media broker **16** may instruct the media controller **12** to begin streaming the video content item to the desired renderer **14**. In this manner, the playback state does not need to be communicated to the desired renderer **14** nor does the desired renderer **14** need to request the video content from the media controller **12**. In a second alternative embodiment, the streaming of the video content item may be through the media broker **16**. More specifically, after step **508**, the media broker **16** may request the video content item from the media controller **12** and then stream the video content item to the desired renderer **14**.

FIG. **9** is a block diagram of one of the media controllers **12** according to one embodiment of the present disclosure. As illustrated, in this embodiment, the media controller **12** includes a controller **38** connected to memory **40**, one or more secondary storage devices **42**, one or more communication interfaces **44**, and one or more user interface components **46** by a bus **48** or similar mechanism. The controller **38** is a microprocessor, digital Application Specific Integrated Circuit (ASIC), Field Programmable Gate Array (FPGA), or the like. In this embodiment, the controller **38** is a microprocessor, and software is stored in the memory **40** for execution by the controller **38**. The software instructs the controller **38** to perform the functions of the media controller **12** described above. The secondary storage devices **42** are digital data storage devices such as, for example, one or more hard disk drives. The one or more communication interfaces **44** include a network interface to the LAN **18** (FIG. **1**). This same network interface may be used to connect the media controller **12** to the Internet such that the media controller **12** is enabled to obtain video content from Internet based video content. In addition, the one or more communication interfaces **44** may include, for example, a tuner for a terrestrial or satellite based television network that enables the media controller **12** to receive television content, an Infrared (IR) receiver for receiving input from an associated user via a remote controller, or the like. The user interface components **46** may include, for example, one or more buttons, a display, a keypad, or the like.

FIG. **10** is a block diagram of one of the renderers **14** according to one embodiment of the present disclosure. As illustrated, in this embodiment, the renderer **14** includes a controller **50** connected to memory **52**, one or more communication interfaces **54**, a display **56**, and one or more speakers **58** by a bus **60** or similar mechanism. The controller **50** is a microprocessor, digital ASIC, FPGA, or the like. In this embodiment, the controller **50** is a microprocessor, and software is stored in the memory **52** for execution by the controller **50**. The software instructs the controller **50** to perform the

functions of the renderer **14** described above. The one or more communication interfaces **54** include a network interface to the LAN **18** (FIG. **1**). In addition, the one or more communication interfaces **54** may include, for example, a Bluetooth® interface, a wired interface to one of the media controllers **12** (e.g., a High Definition Multimedia Interface (HDMI) interface), an IR receiver for receiving user input via a remote controller, or the like.

FIG. **11** is a block diagram of a device **62** hosting the media broker **16** according to one embodiment of the present disclosure. As illustrated, the device **62** includes a controller **64** connected to memory **66**, one or more secondary storage devices **68**, one or more communication interfaces **70**, and one or more user interface components **72** by a bus **74** or similar mechanism. The controller **64** is a microprocessor, digital ASIC, an FPGA, or the like. In this embodiment, the controller **64** is a microprocessor, and the media broker **16** is implemented in software and stored in the memory **66** for execution by the controller **64**. The secondary storage devices **68** are digital data storage devices such as, for example, one or more hard disk drives. The one or more communication interfaces **70** include a network interface to the LAN **18** (FIG. **1**). The user interface components **72** may include, for example, one or more buttons, a display, a keypad, or the like.

FIG. **12** is a block diagram of the mobile device **20** of FIG. **1** according to one embodiment of the present disclosure. As illustrated, the mobile device **20** includes a controller **76** connected to memory **78**, one or more secondary storage devices **80**, one or more communication interfaces **82**, a digital camera **84**, a digital compass **86**, and one or more user interface components **88** by a bus **90** or similar mechanism. The controller **76** is a microprocessor, digital ASIC, an FPGA, or the like. In this embodiment, the controller **76** is a microprocessor, and the renderer function **32** is implemented in software and stored in the memory **78** for execution by the controller **76**. The secondary storage devices **80** are digital data storage devices such as, for example, one or more hard disk drives, flash memory, or the like. The one or more communication interfaces **82** include a network interface to the LAN **18** (FIG. **1**). In addition, the one or more communication interfaces **82** may include a Bluetooth® interface, a cellular telecommunications interface, or the like. The user interface components **88** may include, for example, one or more buttons, a display, a speaker, a keypad, or the like.

The system **10** of FIG. **1** has substantial opportunity for variation without departing from the spirit or scope of the present disclosure. As a first variation, when transferring display of video content from a renderer **14** to the mobile device **20**, the video content may alternatively be streamed from the renderer **14** to the mobile device **20** via a direct wireless communication link such as, for example, a Bluetooth® connection. As another variation, while the functionality of the media broker **16** has been described herein as being centralized, the present disclosure is not limited thereto. For instance, the functionality of the media broker **16** may alternatively be distributed across two or more of the media controllers **12**.

As a third variation, the concepts described herein are also applicable to more conventional video content delivery systems. For example, a traditional set-top box for a terrestrial or satellite television network, which may or may not have DVR functionality, may be configured to enable transfer of display of video content from a connected display (e.g., a TV connected to the set-top box via a HDMI cable) to a proximate mobile device **20** or vice versa. Here, when transferring display to the mobile device **20**, the set-top box may stream the video content to the mobile device **20** via a direct local wireless connection (e.g., a Bluetooth® connection) or a wireless LAN connection (e.g., an IEEE 802.11x connection) to provide a seamless transfer of display of the video content to the mobile device **20**. Conversely, when transferring display from the mobile device **20**, the video content may either be streamed from the mobile device **20** to the set-top box or the set-top box may obtain the video content from another source (e.g., the television network or an Internet based streaming video service).

As a final variation, while the discussion herein focuses on transferring display between the mobile device **20** and one of the renderers **14**, the present disclosure is not limited thereto. In another embodiment, display may be transferred between two mobile devices **20**. The two mobile devices **20** may also operates as renderers **14** in the system **10** such that they are enabled to display content from any one of the media controllers **12** or display content that is accessible to them from local storage or one or more remote sources. In this case, one mobile device **20** may initiate the transfer process and detect the other mobile device **20** using fiduciary markers, Bluetooth® discovery, location and direction, or the like. The mobile device **20** may then send a transfer request to the media broker **16** in the manner described above where the other mobile device **20** is treated in the same manner as the desired renderer **14** described above. Alternatively, the mobile device **20** may send the transfer request directly to the other mobile device **20**. In this case, for transfer of display from the other mobile device **20**, the other mobile device **20** may stream the video content to the mobile device **20** such that transfer of display of the video content is seamless. For transfer of display to the other mobile device **20**, the mobile device **20** may stream the video content to the other mobile device **20** such that transfer of display of the video content is seamless.

The following uses cases illustrate some of the concepts described herein. Note, however, that these use cases are exemplary and are not intended to limit the scope of the present disclosure.

Use Case 1:

1. John is watching a very exciting basketball game on TV with his family, but wants to get a drink from the fridge.

2. John does not want to pause playback because he is superstitious about watching live shows, but is very parched.

3. John decides to try out the new feature in his home entertainment center, and so he pulls out his smart phone.

4. John opens his smart phone's video player and selects "transfer video" on the opening menu.

5. John points his smart phone's camera at the TV and waits for it to recognize the TV.

6. His smart phone recognizes the TV and the media broker **16** transfers display of the basketball game to his smart phone.

7. John is able to walk into the kitchen and continue watching the basketball game on his smart phone.

8. John returns to the living room and turns off his smart phone since the basketball game was never interrupted, which his family greatly appreciated.

9. Later on in the game, John transfers the video again to his smart phone so that he can continue watching the game as he gets a snack.

10. When he is in the kitchen this time an important basket is made and John uses his smart phone to review the play several times using a DVR functionality provided either by the media controller **12** delivering the basketball game to his smart phone or the media broker **16**. When John gets back to the TV, he is now out of synch with the live game.

11. John asks those in the room if he can now synch the main screen with what is on his smart phone—he is time shifted to 4 minutes earlier in the game when the big play occurred.

12. The rest of the family agrees to this, and John makes a simple gesture from his smart phone to the TV and display is transferred such that playback returns to the earlier time in the game that John was watching on his smart phone.

Use Case 2:

1. Jill is at home watching TV in her kitchen while she's making dinner.

2. An important local news story is being shown so she focuses in on watching it.

3. Although the feed is in high definition the TV is too small to see any details of the live coverage, so Jill wants to go into the other side of the house to watch it on the large screen.

4. Since she doesn't want to miss anything Jill pulls out her tablet and opens the video watching application.

5. Jill selects the "transfer from proximity" option, and in a second the device determines (using Bluetooth) that the closest active video device is the kitchen TV and sends a transfer request to the media broker **16** to transfer display of the program to Jill's tablet.

6. The program begins streaming to Jill's tablet over the WiFi network.

7. Jill turns off the kitchen TV and watches the content on her tablet while she walks into the living room.

8. As Jill gets into the living room she clicks "transfer to proximity" on her tablet. Since her TV is new and has a Bluetooth® device, the tablet determines that the living room TV is the renderer **14** to which Jill wants to transfer display.

9. The media broker **16** effects transfer of display of the program to the living room TV.

10. Jill sits down and turns off her tablet to watch the news coverage.

Those skilled in the art will recognize improvements and modifications to the preferred embodiments of the present disclosure. All such improvements and modifications are considered within the scope of the concepts disclosed herein and the claims that follow.

What is claimed is:

1. A method of operation of a mobile device comprising:

receiving user input that initiates transfer of display of video content rendered to the mobile device from a desired renderer located proximate to the mobile device;

automatically detecting the desired renderer, wherein automatically detecting the desired renderer comprises:

obtaining a location of the mobile device; and

obtaining a direction that the mobile device is pointing while the mobile device is pointed toward the desired renderer;

wherein the desired renderer is enabled to be indentified from a plurality of renderers based on the location of the mobile device and the direction that the mobile device is pointing while the mobile device is pointed toward the desired renderer; and

causing transfer of display of the video content to the mobile device from the desire renderer located proximate to the mobile device.

2. The method of claim **1** wherein automatically detecting the desired renderer comprises obtaining an identifier of the desired renderer via a local wireless discovery process.

3. The method of claim **1** wherein automatically detecting the desired renderer comprises:

obtaining identifiers of two or more renderers within a local wireless communication range of the mobile device in the direction the mobile device is pointing; and

selecting one of the two or more renderers having a highest strength of signal indicator as the desired renderer.

4. The method of claim **1** wherein automatically detecting the desired renderer comprises:

obtaining identifiers of two or more renderers within a local wireless communication range of the mobile device in the direction the mobile device is pointing;

utilizing a digital camera of the mobile device as a digital range finder to approximate a distance between the mobile device and the desired renderer; and

selecting one of the two or more renderers having a strength of signal indicator that corresponds to the distance between the mobile device and the desired renderer as the desired renderer.

5. The method of claim **1** wherein causing transfer of display of the video content to the mobile device from the desired renderer located proximate to the mobile device comprises sending a transfer request to a centralized media broker for a system that comprises a plurality of renderers and a plurality of media controllers, the transfer request comprising information that enables the centralized media broker to identify one of the plurality of renderers as the desired renderer.

6. The method of claim **5** wherein causing transfer of display of the video content to the mobile device from the desired renderer located proximate to the mobile device further comprises:

receiving a response from the centralized media broker, the response comprising information identifying a media controller of the plurality of media controllers that provides the video content to the desired renderer for display at the desired renderer;

sending a request to the media controller for the video content; and

receiving the video content from the media controller in response to the request starting at a point in playback of the video content corresponding to a point in playback of the video content being displayed at the desired renderer at a time of sending the transfer request to the centralized media broker.

7. The method of claim **5** wherein causing transfer of display of the video content to the mobile device from the desired renderer located proximate to the mobile device further comprises:

receiving a response from the centralized media broker, the response comprising information identifying the video content, information identifying a point in playback of the video content being displayed at the desired renderer at a time of sending the transfer request, and information identifying a media controller of the plurality of media controllers from which the video content is accessible;

sending a request to the media controller for the video content starting at the point in playback of the video content being displayed at the desired renderer at the time of sending the transfer request; and

receiving the video content from the media controller in response to the request starting at the point in playback of the video content being displayed at the desired renderer at the time of sending the transfer request.

8. The method of claim **7** wherein the media controller is one of the plurality of media controllers other than a media controller that provides the video content to the desired renderer for display at the desired renderer.

9. The method of claim **1** wherein causing transfer of display of the video content to the mobile device from the desired renderer located proximate to the mobile device comprises:

sending a request to a media controller that is connected to the desired renderer and provides the video content to the desired renderer for display by the desired renderer; and

receiving the video content from the media controller via a local wireless connection starting at a point in playback of the video content being displayed at the desired renderer at the time of sending the request.

10. A mobile device comprising:

a local wireless communication interface; and

a controller associated with the local wireless communication interface, adapted to:

receive user input that initiates transfer of display of video content being rendered to the mobile device from a desired renderer located proximate to the mobile device;

automatically detect the desired renderer, wherein automatically detecting the desired renderer comprises:

obtaining a location of the mobile device; and

obtaining a direction that the mobile device is pointing while the mobile device is pointed toward the desired renderer;

wherein the desired renderer is enabled to be identified from a plurality of renderers based on the location of the mobile device and the direction that the mobile device is pointing while the mobile device is pointed toward the desired renderer; and

cause transfer of display of the video content to the mobile device from the desired renderer located proximate to the mobile device.

11. A non-transitory computer readable medium storing software for instructing a controller of a mobile device to:

receive user input that initiates transfer of display of video content being rendered to the mobile device from a desired renderer locate proximate to the mobile device;

automatically detect the desired renderer, wherein automatically detecting the desired renderer comprises:

obtaining a location of the mobile device; and

obtaining a direction that the mobile device is pointing while the mobile device is pointed toward the desired renderer;

wherein the desired renderer is enabled to be identified from a direction that the mobile device is pointing while the mobile device is pointed toward the desired renderer; and

cause transfer of display of the video content to the mobile device from the desired renderer located proximate to the mobile device.

12. A method of operation of a mobile device comprising:

receiving user input that initiates transfer of display of video content being rendered to the mobile device from a desired renderer located proximate to the mobile device

automatically detecting the desired renderer, wherein automatically detecting the desired renderer comprises capturing a digital image of the desired renderer, wherein the desired renderer is enabled to be indentified via fiduciary markers of the desired renderer in the digital image; and

causing transfer of display of the video content to the mobile device from the desired renderer located proximate to the mobile device.

13. A method of operation of a mobile device comprising:

receiving user input that initiates transfer of display of video content being rendered from the mobile device to a desired renderer located proximate to the mobile device;

automatically detecting the desired renderer, wherein automatically detecting the desired renderer comprises:

obtaining a location of the mobile device; and

obtaining a direction that the mobile device is pointing while the mobile device is pointed toward the desired renderer;

wherein the desired renderer is enabled to be identified from a plurality of renderers based on the location of the mobile device and the direction that the mobile device is pointing while the mobile device is pointed toward the desired renderer; and

causing transfer of display of the video content from the mobile device to the desired renderer located proximate to the mobile device.

14. The method of claim **13** wherein automatically detecting the desired renderer comprises obtaining an identifier of the desired renderer via a local wireless discovery process.

15. The method of claim **13** wherein automatically detecting the desired renderer comprises:

obtaining identifiers of two or more renderers within a local wireless communication range of the mobile device in the direction the mobile device is pointing; and

selecting one of the two or more renderers having a highest strength of signal Indicator as the desired renderer.

16. The method of claim **13** wherein automatically detecting the desired renderer comprises:

obtaining identifiers of two or more renderers within a local wireless communication range of the mobile device in the direction the mobile device is pointing;

utilizing a digital camera of the mobile device as a digital range finder to approximate a distance between the mobile device and the desired renderer; and

selecting one of the two or more renderers having a strength of signal indicator that corresponds to the distance between the mobile device and the desired renderer as the desired renderer.

17. The method of claim **13** wherein causing transfer of display of the video content from the mobile device to the desired renderer located proximate to the mobile device comprises sending a transfer request to a centralized media broker for a system that comprises a plurality of renderers and a plurality of media controllers, the transfer request comprising information that enables the centralized media broker to identify one of the plurality of renderers as the desired renderer.

18. The method of claim **17** wherein the centralized media broker effects display of the video content at the desired renderer starting at a point in playback of the video content being displayed at the mobile device at a time of sending the transfer request to the centralized media broker.

19. The method of claim **13** wherein causing transfer of display of the video content from the mobile device to the desired renderer located proximate to the mobile device comprises:

streaming the video content to one of a group consisting of:

a media controller connected to the desired renderer and the desired renderer via a local wireless connection such that display of the video content starts at the desired renderer at a point in playback of the video content being displayed at the mobile device at a time the transfer was initiated.

20. A mobile device comprising:

a local wireless communication interface; and

a controller associated with the local wireless communication interface, adapted to:

receive user input that initiates transfer of display of video content from the mobile device to a desired renderer located proximate to the mobile device;

automatically detect the desired renderer, wherein automatically detecting the desired renderer comprises:

obtaining a location of the mobile device; and

obtaining a direction that the mobile device is pointing while the mobile device is pointed toward the desired renderer;

wherein the desired renderer is enabled to be identified from a plurality of renderers based on the location of the mobile device and the direction that the mobile device is pointing while the mobile device is pointed toward the desired renderer; and

cause transfer of display of the video content from the mobile device to the desired renderer located proximate to the mobile device.

21. A non-transitory computer readable medium storing software for instructing a controller of a mobile device to:

receive user input that initiates transfer of display of video content being rendered from the mobile device to a desired renderer located proximate to the mobile device;

automatically detecting the desired renderer, wherein automatically detecting the desired rendered comprises:

obtaining a location of the mobile device; and

obtaining a direction that the mobile device is pointing while the mobile device is pointed toward the desired renderer;

wherein the desired renderer is enabled to be identified from a plurality of renderers based on the location of the mobile device and the direction that the mobile device is pointing while the mobile device is pointed toward the desired renderer; and

cause transfer of display of the video content from the mobile device to the desired renderer located proximate to the mobile device.

22. A method of operation of a mobile device comprising:

receiving user input that initiates transfer of display of video content being rendered from the mobile device to a desired renderer located proximate to the mobile device;

automatically detecting the desired renderer, wherein automatically detecting the desired rendered comprises capturing a digital image of the desired renderer, wherein the desired renderer is enabled to be identified via fiduciary markers of the desired renderer in the digital image; and

causing transfer of display of the video content from the mobile device to the desired renderer located proximate to the mobile device.

* * * * *

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(54) **SYSTEM AND METHOD FOR TRANSFERRING MEDIA CONTENT FROM A MOBILE DEVICE TO A HOME NETWORK**

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G06F 3/048 (2006.01)

(52) **U.S. Cl.** **715/772**; 715/771

(57) **ABSTRACT**

A system and a method transfer media content from a mobile device to a home network. A media application on the mobile device may be enabled to share media content with rendering devices in the home network. A user may enable and disable transfer of the media content from the media application to a target rendering device. Further, the media application may indicate visually the target rendering device and whether the media content is currently being transferred. Still further, the user may select a new target rendering device. Moreover, the media application may indicate network errors or other problems which may prevent the rendering of the media content and may enable the user to correct the network errors or the other problems.

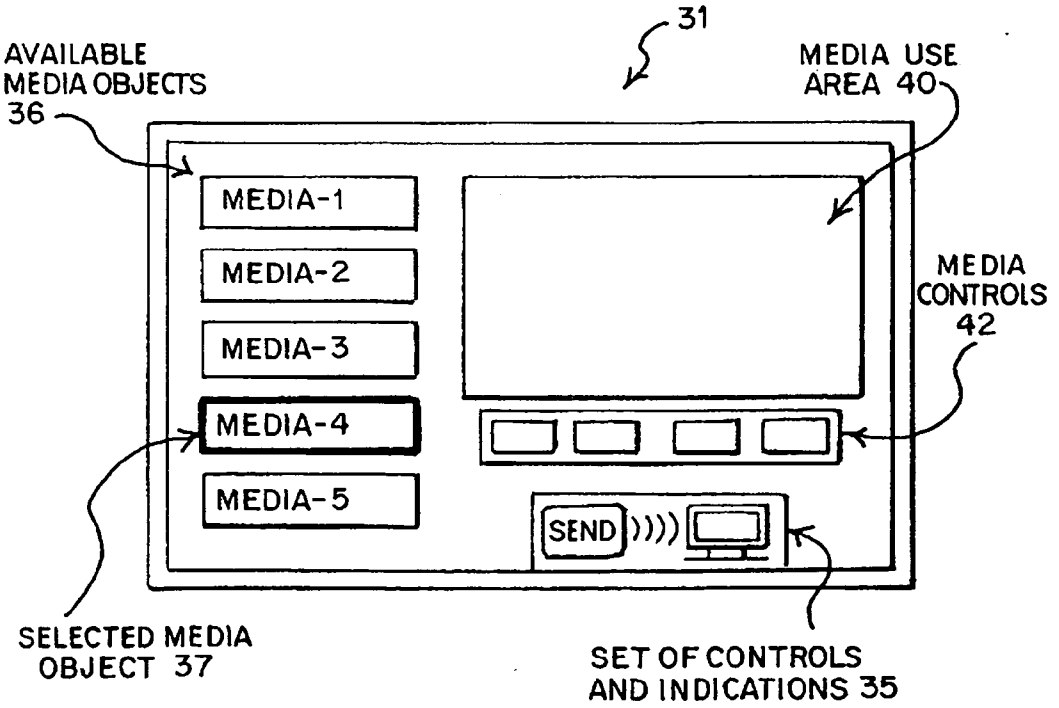


FIG. 1

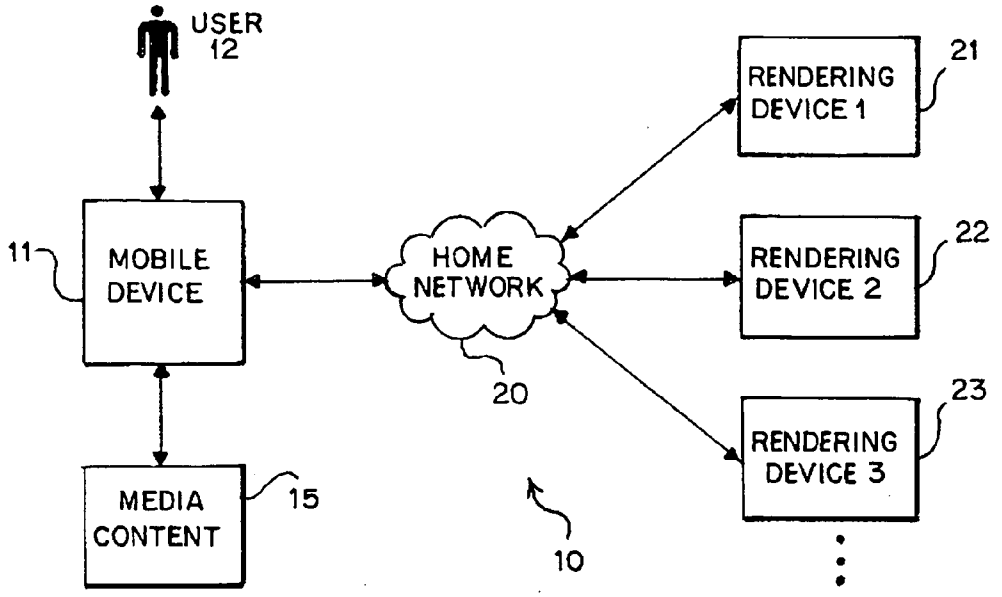

USER
12
RENDERING
DEVICE 1
21
11
MOBILE
DEVICE
HOME
NETWORK
RENDERING
DEVICE 2
22
20
23
RENDERING
DEVICE 3
MEDIA
CONTENT
15
10

FIG. 2

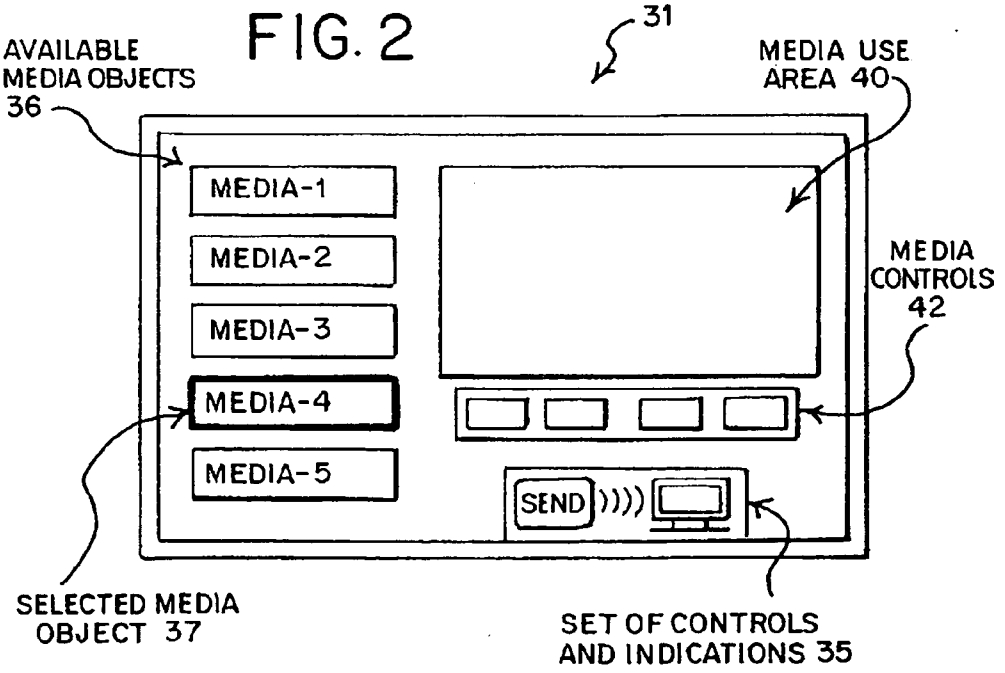

31
AVAILABLE
MEDIA OBJECTS
36
MEDIA USE
AREA 40
MEDIA-1
MEDIA-2
MEDIA-3
MEDIA-4
MEDIA-5
MEDIA
CONTROLS
42
SEND
SELECTED MEDIA
OBJECT 37
SET OF CONTROLS
AND INDICATIONS 35

FIG. 3

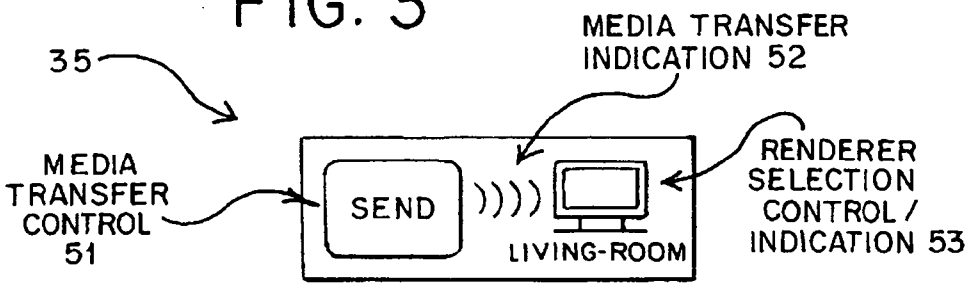


FIG. 4

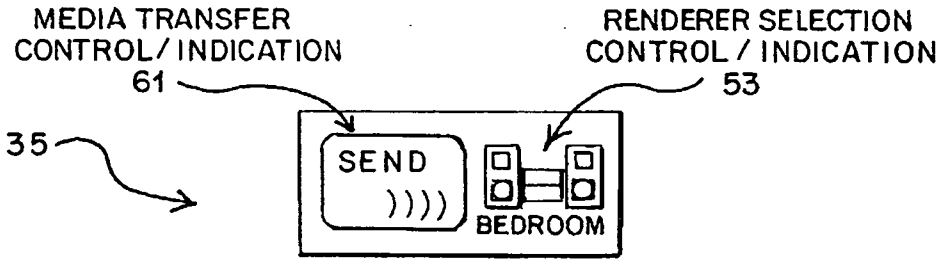


FIG. 5

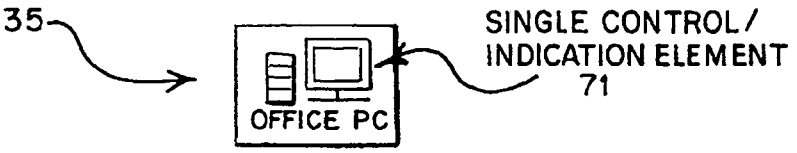


FIG. 6

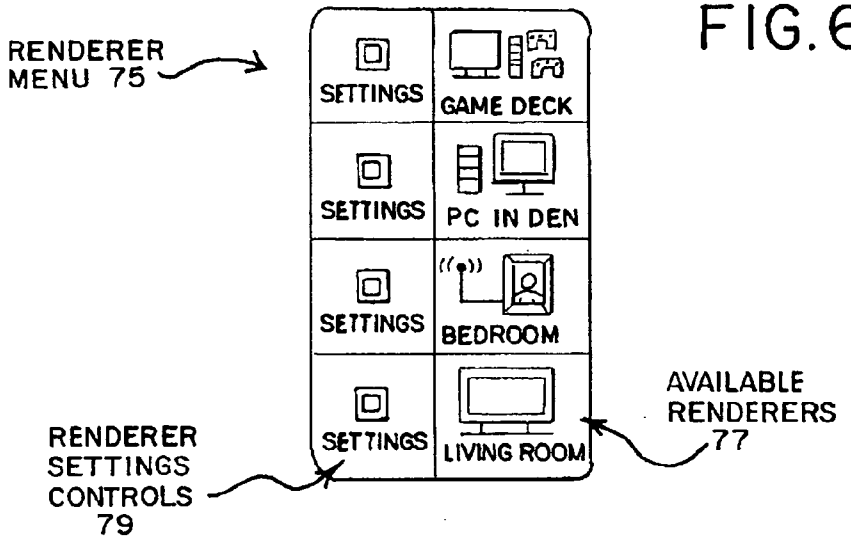


FIG. 7A

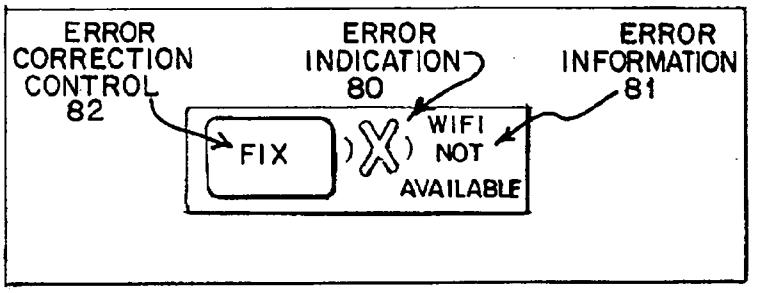


FIG. 7B

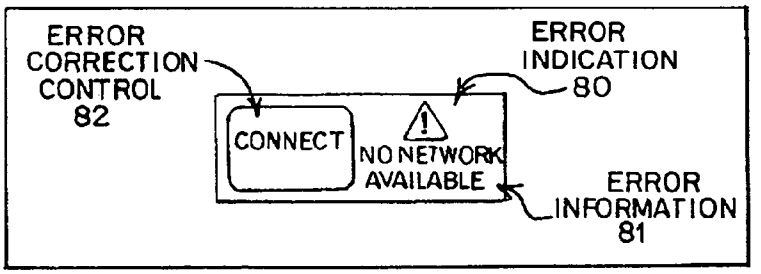


FIG. 7C

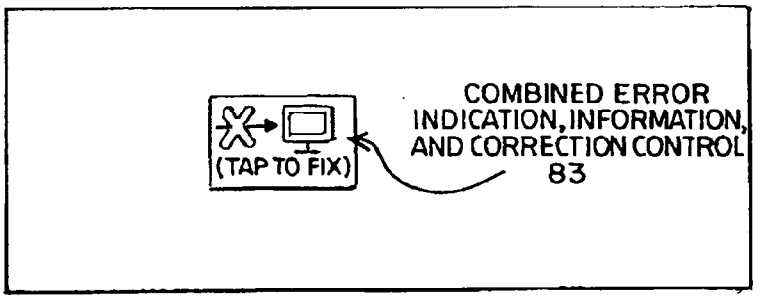


FIG. 8
PRIOR ART

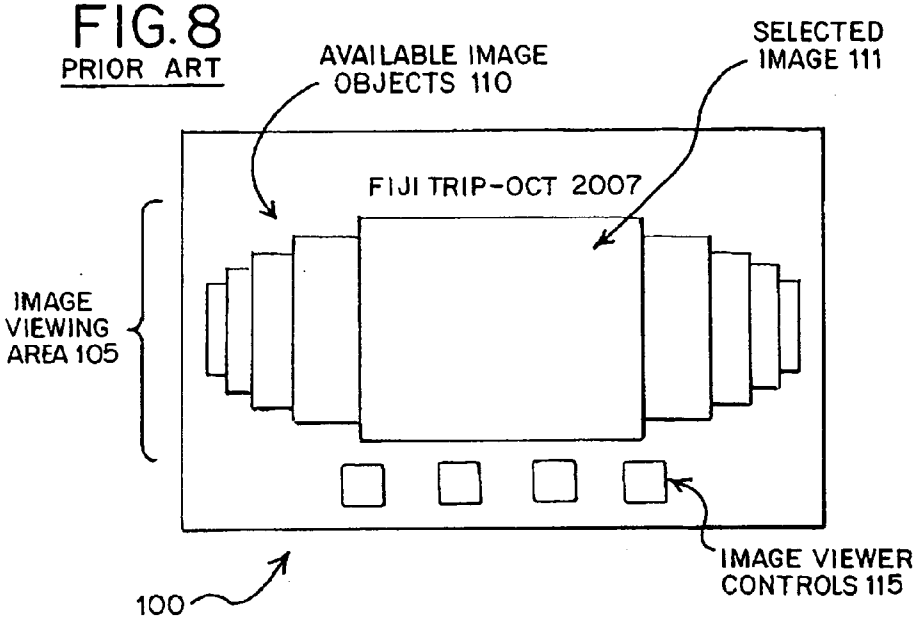


FIG. 9

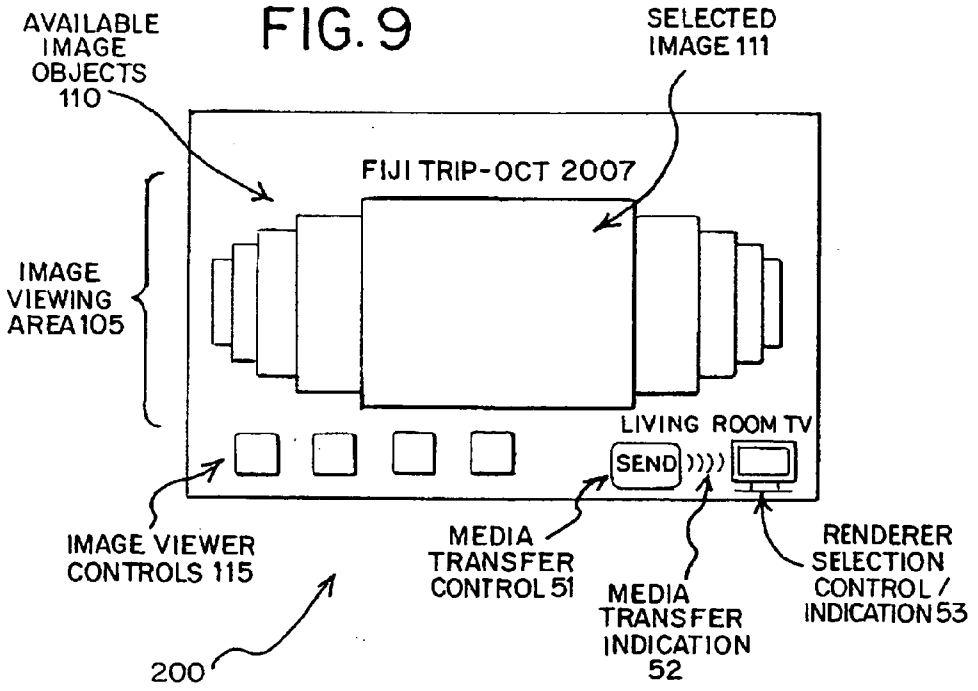


FIG. 10

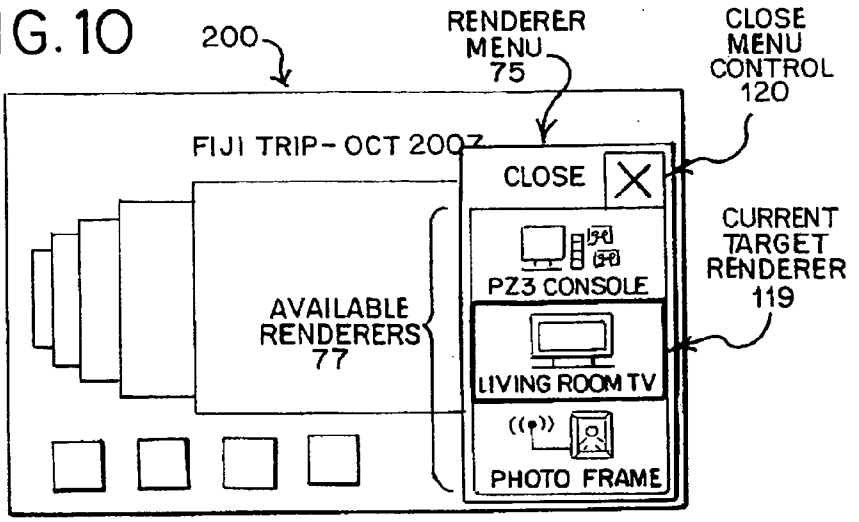


FIG. 11

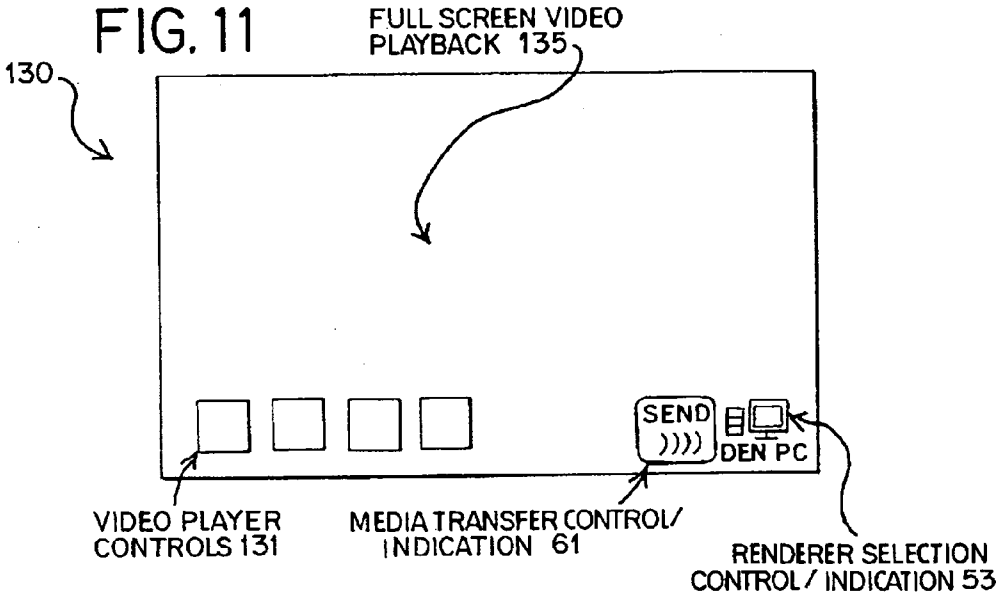
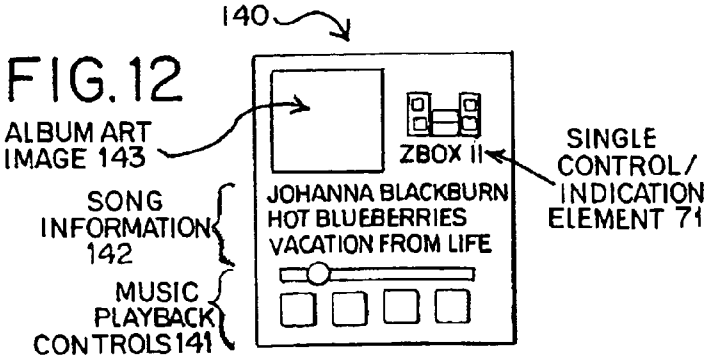


FIG. 12



SYSTEM AND METHOD FOR TRANSFERRING MEDIA CONTENT FROM A MOBILE DEVICE TO A HOME NETWORK

[0001] This application claims the benefit of U.S. Provisional Application Ser. No. 61/283,423, filed Dec. 2, 2009.

BACKGROUND OF THE INVENTION

[0002] The present invention generally relates to a system and a method for transferring media content from a mobile device to a home network. More specifically, the present invention relates to a system and a method which enable a media application on the mobile device to share media content with rendering devices in the home network.

[0003] Known mobile devices may support media functions, such as creation, discovery, organization, management, and/or playback of media content which may include video, audio and/or image content. Examples of mobile devices which support media functions are portable music players, portable video players, portable gaming devices, PDAs and mobile telephones. Some of these devices may be classified as general computing devices which have operating systems and which allow the user to install and run applications. A mobile device may support media functions using built-in functions of the mobile device, built-in applications of the mobile device, and/or other applications which may include applications installed by the user.

[0004] Media home networking is gaining popularity. An increasing number of affordable rendering devices, such as televisions, stereos, gaming consoles, and digital photo frames, may support home networking standards, such as the Universal Plug and Play (UPnP) Audio and Video (AV) standard and the Digital Living Network Alliance (DLNA) specifications. Home networking standards allow the rendering devices to connect to a home network using a suitable connection, such as IEEE 802.11, wired Ethernet cables, or FireWire (trademark of Apple Computer, Inc.). Rendering devices in the home network may discover, may access and/or may play media content accessible using the home network. For example, accessible media content may reside on a media server device, such as a UPnP AV MediaServer accessible using the home network. A network-capable rendering device may present a user interface by which a user may discover, may select, may render and/or may control the accessible media content using the rendering device. Alternatively, an external control point may be used to discover and select the media content for rendering on an available rendering device. The external control point may reside on a PC, a laptop computer, or on a mobile device, such as a PDA or a mobile telephone. Alternatively, the external control point may be a standalone remote control device capable of communicating with media servers and rendering devices in the home network. The external control point may communicate with media server devices and rendering devices in the home network using home networking standards, such as the UPnP AV standard, the DLNA specifications, and other standard media networking protocols.

[0005] A mobile device with media functionality may connect to a home network so that the media content, the applications, and the functions available on the mobile device may be used with the rendering devices available in the home network. For example, a user of a mobile phone may create photographs or videos using the camera of the mobile phone. Such user-generated media content may be transferred and/or may be streamed from the mobile phone to the home network for rendering on a network-capable television which may be available in the home network. Therefore, the user may experience the media content using a video screen which is larger and has a higher quality of rendering relative to the screen of the mobile phone. As another example, a user of a mobile device may have access to music content which may be played back using the mobile device. Such music content may be streamed from the mobile device to the home network for rendering on a network-capable stereo in the home network. Therefore, the user may render the music content on a high quality stereo in the home instead of being limited to playback using the mobile device.

[0006] The media content provided by a mobile device may include local media content stored on the mobile device as noted in the two preceding examples. The media content provided by the mobile device may also include media content accessible to the mobile device which is not locally stored on the mobile device. For example, the media content may be streamed from the internet using a media content service accessible to the mobile device. The media content accessible to the mobile device and not locally stored on the mobile device may be accessed using a service-specific application on the mobile device or a more general application, such as a mobile device web browser.

[0007] Three well-known approaches share media content from a mobile device to a home network. In the first approach, which may be referred to as the "mobile-device-as-server" approach, the mobile device acts as a media server which makes media content available to other devices using the home network. For example, the mobile device may present itself as a standard UPnP AV MediaServer. Then, control points and rendering devices in the home network may discover the media server and may use the media server to access the local media content stored on the mobile device. Various mobile phones support the "mobile-device-as-server" approach, such as, for example, the Nokia N95 (trademark of Nokia Corporation), the Samsung 1910 OMNIA (trademark of Samsung Electronics Co., Ltd.), and the Sony Ericsson G705 (trademark of Sony Ericsson Mobile Communications AB).

[0008] The "mobile-device-as-server" approach allows the mobile device to share media content stored on the mobile device with other devices in the home network. However, the "mobile-device-as-server" approach does not allow the user to control the rendering using the media functions, the applications or the user interface available on the mobile device. The mobile device merely acts as a passive media server, and the user is limited to the user interfaces available on the external control points and the rendering devices in the home network. Such user interfaces are necessarily generic, suitable for browsing and using the content available on any generic media server in the home network. Thus, organization, management, manipulation, and other special features which may be provided by the media functions and the applications of the mobile device are not available and cannot be used in the "mobile-device-as-server" approach.

[0009] In the second approach, which may be referred to as the "sharing application" approach, the mobile device may present a special sharing application which allows the media content available on the mobile device to be directed to rendering devices in the home network under the control of the special sharing application. For example, the Samsung i910

OMNIA phone provides a built-in "Connected Home Application" which allows the user to browse and select media content available on the phone, discover and select an appropriate rendering device in the home network, and render the selected content on the selected rendering device. The "Connected Home application" also presents controls by which the user of the mobile device may control the rendering of the selected content on the selected rendering device using the mobile device.

[0010] A disadvantage of the "sharing application" approach is that the approach artificially separates the media experience on the mobile device into two areas. The user has various media functions and applications by which media may be created, organized, manipulated, and rendered on the mobile device. However, these functions and applications are unaware of and cannot use rendering devices and other devices in the home network. The user has the separate sharing application which allows the media content stored on the mobile device to be rendered by the external rendering devices. However, the sharing application cannot use the creation, manipulation, organization, or other features of the various other media functions and applications which are available on the mobile device. Further, the user may invest time and effort to learn and become familiar with one or more of the media functions and applications on the mobile device. Then, the user must invest additional time and effort to learn and become familiar with the different user interface of the separate sharing application. Such artificial separation of the media experience is not ideal for the user.

[0011] In the third approach, which may be referred to as the "media application extension" approach, the various media functions and applications available on a mobile device may be individually extended with home network sharing capabilities. This approach is followed to some extent by Nokia N-Series phones such as the Nokia N95. The built-in applications, such as "Photos" or "Gallery" in such phones, expose a "Show Via Home Network" function in the Options menu of the application. This function sends the media content viewed or rendered in the application to a rendering device in the home network. The "media application extension" approach is an improvement over the "mobile-device-as-server" and the "sharing application" approach because the user interface of the familiar built-in media applications may be used to access and select the media content if the "Show Via Home Network" function is used. Moreover, the user interface of the familiar built-in media applications may be used to control the rendering of the media content on rendering devices in the home network if the "Show Via Home Network" function is used.

[0012] The implementation of the "media application extension" approach on current Nokia N-Series phones has disadvantages. A first disadvantage is that the "Show Via Home Network" function is hidden in the Options menu. Therefore, while using the built-in media applications on a Nokia N-Series phone, the user has no indication that the home network sharing function is available and no visible indication of the status of the home network or the available rendering devices. The user must open the Options menu to discover the "Show Via Home Network" function, and the user must remember where the "Show Via Home Network" function may be found if the Options menu is closed.

[0013] A second disadvantage is that the status of the home network and the availability of rendering devices is not displayed and is not accessible until the user invokes the "Show Via Home Network" function. After invoking the "Show Via Home Network" function, the user must wait a delay time while the phone accesses the home network and discovers the available rendering devices for display in a rendering device selection list. The delay time may be significant; for example, the Nokia N95 phone may exhibit a delay time of approximately eight seconds. After waiting the delay time, the user may select an available rendering device from the rendering device selection list. After the user selects the rendering device, the media content which the user views and/or renders in the application is transferred for display on the selected rendering device. Further, the user may use the familiar controls and user interface of the application to select, organize, control and render the media . . . . The selected, rendering device continues to render the media content including new media content which may be selected by the user within the application. However, the application and the mobile device do not display a visible indication of the external rendering or the rendering status. Further, the application and the mobile device do not display a visible control to deactivate the external rendering function, and the control to deactivate the external rendering function is hidden in the Options menu of the application.

SUMMARY OF THE INVENTION

[0014] The present invention generally relates to a system and a method for transferring media content from a mobile device to a home network. More specifically, the present invention relates to a system and a method which enables a media application on the mobile device to share media content with rendering devices in the home network. The system and the method may provide a combination of controls and indications which may enable a user to use the media content in the home network.

[0015] To this end, in an embodiment of the present invention, a method for transferring media content from a mobile device to a home network is provided. The mobile device has a user interface, and the home network has rendering devices. The method has the steps of displaying a media transfer control, a media transfer indication and a renderer selection control/indication concurrently in the user interface of the mobile device during execution of a media application by the mobile device; identifying first media content using the media application; identifying a first target rendering device of the rendering devices in the home network wherein the renderer selection control/indication identifies the first target rendering device to a user of the mobile device; accepting user input on the user interface of the mobile device which selects the media transfer control; rendering the first media content on the first target rendering device in response to selection of the media transfer control; and indicating to the user of the mobile device that the first target rendering device is rendering the first media content wherein the media transfer indication indicates to the user of the mobile device that the first target rendering device is rendering the first media content.

[0016] In an embodiment, the method has the step of displaying playback controls, the media transfer control, the media transfer indication and the renderer selection control/indication concurrently in the user interface of the mobile device wherein the playback controls enable the user of the mobile device to control rendering of the first media content on the first target rendering device.

[0017] In an embodiment, the method has the step of displaying a webpage in the user interface of the mobile device

wherein the first media content is identified as internet media content selected from the webpage by the user of the mobile device.

[0018] In an embodiment, the method has the step of obtaining the first media content from a media server located in the home network in response to the selection of the media transfer control wherein the first target rendering device obtains the first media content from the media server in response to the selection of the media transfer control without the mobile device transmitting the first media content to the first target rendering device.

[0019] In an embodiment, the method has the step of transmitting the first media content from local storage on the mobile device to the first target rendering device in response to the selection of the media transfer control.

[0020] In an embodiment, the method has the step of transmitting the first media content from a remote content provider connected to the mobile device by a network which is a different network than the home network wherein the remote content provider transmits the first media content to the mobile device using the network and the mobile device transmits the first media content to the first target rendering device using the home network in response to the selection of the media transfer control.

[0021] In an embodiment, the method has the step of graphically connecting the media transfer control and the renderer selection control/indication using the media transfer indication while the first target rendering device is rendering the first media content.

[0022] In an embodiment, the method has the step of automatically identifying the first target rendering device from the rendering devices in the home network in response to identification of the first media content wherein the mobile device identifies the first target rendering device in response to the identification of the first media content without selection of the first target rendering device by the user after the identification of the first media content and further wherein the first target rendering device has media capabilities which correspond to the first media content.

[0023] In an embodiment, the method has the steps of accepting a series of user input events on the mobile device over a time period wherein each of the user input events in the series cause changes to a set of media content selected in the media application; and periodically updating a representation of a current target rendering device to reflect the changes to the set of media content selected in the media application wherein the renderer selection control/indication displays the representation of the current target rendering device and further wherein the representation of the current target rendering device identifies the first target rendering device when the first media content is selected in the media application.

[0024] In an embodiment, the method has the steps of identifying a second target rendering device of the rendering devices in the home network wherein the renderer selection control/indication identifies the second target rendering device to the user of the mobile device before identification of the first target rendering device wherein the first target rendering device and the second target rendering device are both capable of rendering the first media content; and detecting unavailability of the second target rendering device wherein the mobile device detects the unavailability of the second target rendering device wherein the renderer selection control/indication identifies the first target rendering device to the user in response to detection of the unavailability of the second target rendering device.

[0025] In an embodiment, the media transfer control and the media transfer indication are a single functional element provided by the user interface of the mobile device and further wherein the single functional element provides the media transfer control and the media transfer indication.

[0026] In an embodiment, the media transfer control, the media transfer indication and the renderer selection control/indication are a single functional element provided by the user interface of the mobile device and further wherein a user of the mobile device uses a first invocation of the single functional element to select the media transfer control and uses a second invocation of the single functional element to select the renderer selection control/indication wherein the user interface displays a list of available rendering devices in the home network in response to selection of the renderer selection control/indication and further wherein the first invocation and the second invocation select the single functional element in different ways.

[0027] In an embodiment, the method has the step of replacing the media transfer indication with an error indication in response to an error preventing the first target rendering device from rendering the first media content after selection of the media transfer control wherein the error indication indicates that the first target rendering device cannot render the first media content.

[0028] In an embodiment, the method has the step of replacing the renderer selection control/indication with error information in response to an error preventing the first target rendering device from rendering the first media content after selection of the media transfer control wherein the error information describes the error.

[0029] In an embodiment, the method has the step of replacing the media transfer control with an error correction control wherein selection of the error correction control by user input in the user interface of the mobile device enables correction of an error preventing the first target rendering device from rendering the first media content.

[0030] In an embodiment, the method has the step of selecting the media transfer control on the mobile device after initiating rendering of the first media content on the first target rendering device wherein selecting the media transfer control after initiating rendering of the first media content on the first target rendering device discontinues rendering of the first media content on the first target rendering device.

[0031] In another embodiment of the present invention, a method for transferring media content from a mobile device to a home network is provided. The mobile device has a user interface, and the home network has rendering devices. The method has the steps of displaying a media transfer control and a renderer selection control/indication concurrently in the user interface of the mobile device during execution of a media application by the mobile device wherein the renderer selection control/indication visually indicates a first target rendering device; identifying the media content using the media application; accepting first user input in the user interface of the mobile device wherein the first user input selects the renderer selection control/indication; displaying a list of available rendering devices in the home network wherein the user interface of the mobile device displays the list in response to selection of the renderer selection control/indication; accepting second user input in the user interface of the

mobile device wherein the second user input selects a second target rendering device from the list of available rendering devices; and rendering the media content on the second target rendering device.

[0032] In an embodiment, the method has the step of indicating the rendering devices in the home network which have media capabilities which correspond to the media content wherein the list of available rendering devices indicates the rendering devices in the home network which have the media capabilities which correspond to the media content.

[0033] In an embodiment, the method has the step of indicating the rendering devices in the home network which have media capabilities which do not correspond to the media content wherein the list of available rendering devices indicates the rendering devices in the home network which do not have the media capabilities which correspond to the media content.

[0034] In an embodiment, the method has the step of automatically identifying the first target rendering device from the rendering devices in the home network before the renderer selection control/indication visually indicates the first target rendering device wherein the mobile device identifies the first target rendering device without selection of the first target rendering device by the user.

[0035] In an embodiment, the media transfer control and the renderer selection control/indication are a single functional element provided by the user interface of the mobile device and further wherein the single functional element provides the media transfer control and the renderer selection control/indication.

[0036] In an embodiment, the method has the step of providing renderer setting controls with the list of available rendering devices wherein the user interface of the mobile device displays the renderer setting controls in response to selection of the renderer selection control/indication and further wherein the renderer setting controls enable a user of the mobile device to establish settings associated with each of the available rendering devices wherein a user of the mobile device establishes the settings for the second target rendering device before the second user input and further wherein the second target rendering device implements the settings during rendering of the media content.

[0037] In an embodiment, the method has the step of changing the renderer selection control/indication from a first icon to a second icon in response to selection of the second rendering device wherein the second icon visually indicates the second target rendering device.

[0038] In an embodiment, the method has the step of accepting third user input in the user interface of the mobile device wherein the third user input selects the media transfer control and further wherein the rendering of the media content on the second target rendering device is initiated in response to selection of the media transfer control.

[0039] In another embodiment of the present invention, a system for transferring media content to rendering devices in a home network using a mobile device is provided. The system has a media application executing on the mobile device wherein the media application enables a user to identify selected media content; a media transfer control which enables the user to identify a selected mode of operation from a first mode of operation and a second mode of operation wherein the first mode of operation transfers the selected media content to one or more of the rendering devices in the home network and further wherein the second mode of operation does not transfer the selected media content to any of the rendering devices in the home network; a media transfer indication which visually indicates the selected mode of operation; and a renderer selection control/indication which visually indicates a target rendering device from the rendering devices in the home network and which enables the user to change the target rendering device wherein the first mode of operation transfers the selected media content to the target rendering device.

[0040] In an embodiment, the system has a user interface of the mobile device wherein the media transfer control, the media transfer indication, and the renderer selection control/indication are concurrently displayed in the user interface during execution of the media application.

[0041] In an embodiment, the system has a plurality of media applications executable on the mobile device wherein each of the plurality of media applications enables the user to identify the selected media content and further wherein each of the plurality of media applications provides the media transfer control, the media transfer indication and the renderer selection control/indication.

[0042] In an embodiment, the media transfer control and the media transfer indication are a single functional element provided by the mobile device and further wherein the single functional element provides the media transfer control and the media transfer indication.

[0043] In an embodiment, the media transfer indication and the renderer selection control/indication are a single functional element provided by the mobile device and further wherein the single functional element provides the media transfer indication and the renderer selection control/indication.

[0044] In an embodiment, the media transfer control, the media transfer indication and the renderer selection control/indication are a single functional element provided by the mobile device and further wherein the single functional element provides the media transfer control, the media transfer indication and the renderer selection control/indication.

[0045] In an embodiment, the mobile device automatically identifies the target rendering device from the rendering devices in the home network in response to identification of the selected media content by the user and further wherein the mobile device identifies the target rendering device without selection of the target rendering device by the user after the identification of the selected media content wherein the target rendering device has media capabilities which correspond to the selected media content.

[0046] In an embodiment, a first rendering device and a second rendering device of the rendering devices in the home network are capable of rendering the selected media content and further wherein the renderer selection control/indication identifies the first rendering device as the target rendering device to the user of the mobile device wherein the mobile device detects unavailability of the first rendering device after identifying the first rendering device as the target rendering device and further wherein the renderer selection control/indication identifies the second rendering device as the target rendering device to the user in response to detection of the unavailability of the first target rendering device.

[0047] In an embodiment, the system has a list of the rendering devices in the home network wherein the list is displayed in response to user input which selects the renderer selection/control indication and further wherein the user changes the target rendering device using the list.

[0048] In an embodiment, the system has an error indication visually indicated by one of the media transfer indication and the renderer selection control/indication wherein the media transfer control provides at least one option to correct an error indicated by the error indication.

[0049] It is, therefore, an advantage of the present invention to provide a system and a method for transferring media content from a mobile device to a home network.

[0050] Another advantage of the present invention is to provide a system and a method for transferring media content from a mobile device to a home network which display persistent, visible controls on the mobile device for rendering the media content on a rendering device in the home network.

[0051] And, another advantage of the present invention is to provide a system and a method for transferring media content from a mobile device to a home network which use the mobile device to display persistent, visible status of rendering of the media content by a rendering device in the home network.

[0052] Yet another advantage of the present invention is to provide a system and a method for transferring media content from a mobile device to a home network which present controls and status in a media application executed by the mobile device.

[0053] Still further, an advantage of the present invention is to provide a system and a method for transferring media content from a mobile device to a home network which enable a user to use the mobile device to start and stop external rendering of the media content currently selected in a media application executed by the mobile device.

[0054] And, another advantage of the present invention is to provide a system and a method for transferring media content from a mobile device to a home network which provide controls on the mobile device to enable a user to select a rendering device.

[0055] Yet another advantage of the present invention is to provide a system and a method for transferring media content from a mobile device to a home network which use the mobile device to indicate a target rendering device appropriate for the media content currently selected in a media application on the mobile device.

[0056] Still further, an advantage of the present invention is to provide a system and a method for transferring media content from a mobile device to a home network which use the mobile device to indicate and/or correct a network problem which prevents external rendering.

[0057] And, another advantage of the present invention is to provide a system and a method for transferring media content from a mobile device to a home network which combine controls and status on the mobile device in a compact, minimal form.

[0058] Still further, an advantage of the present invention is to provide a system and a method for transferring media content from a mobile device to a home network which use the same presentation of controls and status in multiple media applications on a mobile device.

[0059] Another advantage of the present invention is to provide a system and a method for transferring media content from a mobile device to a home network which remove the need for a user to select a rendering device.

[0060] Yet another advantage of the present invention is to provide a system and a method for transferring media content from a mobile device to a home network which enables a user to send the media content from an application on the mobile device to an external rendering device by invoking a single control in a single step on the mobile device.

[0061] Still further, an advantage of the present invention is to provide a system and a method for transferring media content from a mobile device to a home network which minimize the delay to send the media content from an application on the mobile device to an external rendering device.

[0062] Another advantage of the present invention is to provide a system and a method for transferring media content from a mobile device to a home network which control transfer of the media content using a compact arrangement of one, two, or three functional elements displayed on the mobile device.

[0063] Yet another advantage of the present invention is to provide a system and a method for transferring media content from a mobile device to a home network which add a set of controls and indications to any media application on the mobile device.

[0064] Still further, an advantage of the present invention is to provide a system and a method for transferring media content from a mobile device to a home network which continuously update an indication of a current target rendering device based on changes in the media content, changes in available rendering devices, and settings and preferences established by a user.

[0065] Another advantage of the present invention is to provide a system and a method for transferring media content from a mobile device to a home network which supplement a generic mobile device media application which lacks media transfer and sharing capabilities with a set of controls and indications for media transfer and sharing.

[0066] Moreover, an advantage of the present invention is to provide a system and a method for transferring media content from a mobile device to a home network which provide an intuitive picture of media flowing from a media transfer control to a target rendering device.

[0067] Additional features and advantages of the present invention are described in, and will be apparent from, the detailed description of the presently preferred embodiments and from the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0068] FIG. **1** illustrates a system for transferring media content from a mobile device to a home network in an embodiment of the present invention.

[0069] FIG. **2** illustrates a user interface of a media application having a set of controls and indications in an embodiment of the present invention.

[0070] FIGS. **3-5** illustrate sets of controls and indications in embodiments of the present invention.

[0071] FIG. **6** illustrates a renderer menu in an embodiment of the present invention.

[0072] FIGS. **7**A, **7**B and **7**C illustrate sets of controls and indications in embodiments of the present invention.

[0073] FIG. **8** illustrates a user interface of a prior art image viewer application.

[0074] FIGS. **9** and **10** illustrate user interfaces of an image viewer application in embodiments of the present invention.

[0075] FIG. **11** illustrates a user interface of a video player application in an embodiment of the present invention.

[0076] FIG. **12** illustrates a user interface of a music player application in an embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0077] The present invention generally relates to a system and a method for transferring media content from a mobile device to a home network. More specifically, the present invention relates to a system and a method which enable a media application on the mobile device to share media content with rendering devices in the home network. The system and the method provide a compact set of controls and indications which may enable a user to enable and disable transfer of the media content from the media application to a target rendering device. Further, the compact set of controls and indications may visually indicate the target rendering device and whether the media content is currently being transferred. Still further, the compact set of controls and indications may enable the user to select a new target rendering device. Moreover, the compact set of controls and indications may indicate network errors or other problems which may prevent the rendering of the media content and may enable the user to correct the network errors or the other problems.

[0078] Referring now to the drawings wherein like numerals refer to like parts, FIG. **1** generally illustrates a system **10** for transferring media content **15** from a mobile device **11** to a home network **20**, such as, for example, a residential local area network, in an embodiment of the present invention. The mobile device **11** may connect to and/or may communicate with one or more available rendering devices using the home network **20**. For example, the mobile device **11** may be connected to a first rendering device **21**, a second rendering device **22** and/or a third rendering device **23** (collectively hereinafter "the rendering devices **21**,**22**,**23**") using the home network **20**. The mobile device **11** may be any mobile device which may be capable of connecting to the available rendering devices, such as, for example, the rendering devices **21**,**22**,**23**, using the home network **20**. For example, the mobile device **11** may be a portable music player, a portable video player, a portable gaming device, a personal digital assistant (PDA), a mobile telephone, a laptop PC, a netbook PC and/or the like. The mobile device **11** may have a display screen capable of displaying user interface elements and/or visual media content. Typically, a size of the display screen may be limited by a physical size of the mobile device **11**. The mobile device **11** may have one or more local audio rendering capabilities. For example, the mobile device **11** may have an internal speaker, a headphone jack, an audio output jack, and/or the like. The present invention is not limited to a specific embodiment of the mobile device **11**.

[0079] The mobile device **11** may have a user interface by which a user **12** may interact with and/or may control the mobile device **11**. Visual elements of the user interface may be displayed on the display screen of the mobile device **11**. The user **12** may interact with the mobile device **11** and/or the user interface based on one or more user input methods provided by the mobile device **11**. For example, the mobile device **11** may have a touchscreen, a trackball, a joystick, a five-way navigation pad, a 4-way directional pad, a numeric keypad, an alphanumeric keyboard, softkeys, buttons, orientation sensors and/or the like. The present invention is not limited to a specific embodiment of the user input methods which may be provided by the mobile device **11**.

[0080] The home network **20** may utilize one or more network connection technologies, such as, for example, IEEE 802.11 ("WiFi"), IEEE 802.3 ("Ethernet"), IEEE 1394 ("FireWire") and/or the like. The home network **20** may connect to and/or may communicate with other devices not shown in FIG. **1**, such as, for example, personal computers, laptop computers, media servers and/or the like. The home network **20** may provide a connection to other networks, such as, for example, the internet.

[0081] The available rendering devices, such as, for example, the rendering devices **21**,**22**,**23**, may support one or more multimedia home networking standards, such as, for example, UPnP AV and/or DLNA. The available rendering devices may be, for example, a television, a set-top box, a digital photo frame, a stereo, an audio receiver box, a gaming console, a personal computer, a laptop PC, a netbook PC, and/or the like. The available rendering devices may be any rendering device capable of rendering the media content received using the home network **20** as known to one skilled in the art, and the present invention is not limited to a specific embodiment of the available rendering devices.

[0082] The mobile device **11** may have access to the media content **15**. The media content **15** may be stored locally on the mobile device **11**. For example, the media content **15** may reside in internal memory of the mobile device **11**, on an internal disk, and/or on a removable storage card connected to the mobile device **11**. The media content **15** may be stored remotely relative to the mobile device **11**. For example, the media content **15** accessed by the mobile device **11** may be media content stored on one or more servers in the home network **20**. As another example, the media content **15** accessed by the mobile device **11** may be media content stored outside of the home network **20** and/or accessed using a network connection. The mobile device **11** may access the media content **15** using the internet. The mobile device **11** may obtain the media content **15** from one or more content services which may be freely available and/or may require a subscription. The present invention is not limited to a specific means by which the mobile device **11** may access the media content **15**.

[0083] The mobile device **11** may have one or more media applications. The media application may be a built-in function, a built-in application, an installed application, a user-installed application and/or the like. The media application may enable the user **12** to create, access, identify, select, organize, manage, manipulate, use and/or render the media content **15** using the mobile device **11**. The media application may be any application in which a set of the media content **15** may be identified, may be selected and/or may be used. Hereinafter, the term "media in context" denotes a set of one or more media content objects of the media content **15** which are currently identified, selected, and/or in use in the media application. The media application may identify, may select and/or may use the media content **15** regardless of whether a rendering device is accessible using the home network **20**. The media application may be provided by and/or stored by a computer readable medium, such as, for example, a compact disc, a DVD, a computer memory, a hard drive and/or the like. The computer readable medium may enable the laptop PC, the netbook PC and/or the like to execute the media application.

[0084] The media content **15** may be, for example, image content, video content, audio content and/or the like. The image content may be, for example, digital photographs, bit-

map images, vector graphics images, image files and/or the like. The video content may be, for example, digital video streams, digital video files, video clips, television programs, movies, music videos, instructional videos and/or the like. The audio content may be, for example, digital music files, music streams, recorded audio, encoded speech, synthetic audio files, music compositions, ringtones and/or the like. The present invention is not limited to a specific embodiment of the media content **15**, and the media content **15** may be any media content accessible to the mobile device **11** known to one having ordinary skill in the art.

[0085] FIG. **2** generally illustrates a user interface **31** of the media application in an embodiment of the present invention. FIG. **2** also generally illustrates functional elements which may be provided by the user interface **31** of the media application. An appearance, an arrangement, an organization and/or a layout of the functional elements and the user interface **31** may differ between media applications, and the present invention is not limited to a specific embodiment of the appearance, the arrangement, the organization and/or the layout of the functional elements or the user interface **31** of the media application.

[0086] The media application may provide access to a set of available media content objects and/or may enable the user **12** to select one or more of the available media content objects. As shown in FIG. **2**, the media application may display symbolic representations **36** of the available media content objects in the user interface **31** of the media application. As shown in FIG. **2**, the user interface **31** of the media application may display a selected symbolic representation **37** for one or more selected media objects. In an embodiment, the media application may not display the symbolic representations **36** of the media objects and/or the selected symbolic representation **37** for the selected media objects. In an embodiment, the media application may display the symbolic representations **36** only in certain screens, views, or stages of use of the media application. The minimal requirement for the media application is that the media application must be capable of having the "media in context" as previously defined. Thus, the "media in context" for the media application of FIG. **2** may be one or more selected media objects, may be the available media objects and/or may be some other set of media objects relevant to the user **12**.

[0087] The user interface **31** of the media application may have a media use area **40**. The media use area **40** may enable the user **12** to create, organize, arrange, manage, manipulate, use and/or play the media content **15** using the mobile device **11**. For example, the media use area **40** may be an image viewing area; a video playback area; an area providing metadata associated with one or more audio media content objects; a playlist editing area; an area for arranging media content into folders, favorites, or other organizational structures; and/or the like. The media use area **40** may be an area for browsing, searching, discovering and/or selecting the media content **15**. The media use area **40** may enable the user **12** to create, edit, and/or modify the media content **15**. The media use area **40** may be any area for using the media content **15** as known to one having ordinary skill in the art, and the present invention is not limited to a specific embodiment of the media use area **40**.

[0088] The user interface **31** of the media application may have media controls **42**. The media controls **42** may enable the user **12** to control media-related tasks, such as, for example, creation, discovery, selection, organization, management, manipulation and/or rendering of the media content **15**. The media controls **42** may vary between media applications because of the specialized nature of specific media applications. The present invention is not limited to a specific embodiment of the media controls **42**.

[0089] The user interface **31** of the media application may have a set of controls and indications **35** as illustrated in FIG. **2**. The set of controls and indications **35** may enable the user **12** to enable and/or disable transfer of the media content **15** from the media application to a target rendering device of the available rendering devices, such as, for example, the rendering devices **21**,**22**,**23**. Further, the set of controls and indications **35** may visually indicate the target rendering device and/or may visually indicate whether the media content **15** is currently being transferred. Still further, the set of controls and indications **35** may enable the user **12** to select a new target rendering device of the available rendering devices, such as, for example, the rendering devices **21**,**22**,**23**. Moreover, the set of controls and indications **35** may indicate network errors and/or other problems which may prevent the rendering of the media content **15** and/or may enable the user **12** to correct the network errors and/or the other problems.

[0090] The media application may be, for example, an image viewer, a video player, a music player, an internet radio player, a media management application, a camera application, an audio recording application, a photo organization application, a photo album editor, a music playlist editor, a video editor, and/or the like. The media application may be a web browser application capable of identifying media content which may be rendered and/or may be contained in and/or accessible through web pages retrieved by the web browser application. The media application may be a media service application designed to provide access to media content from one or more associated content services. The present invention is not limited to a specific embodiment of the media application, and the media application may be any application capable of creating, accessing, identifying, selecting, playing, rendering and/or using the media content **15** on the mobile device **11**.

[0091] As a first example of use of the set of controls and indications **35**, the media application may be an image viewer application which may enable digital photographs and/or other images stored on the mobile device **11** to be viewed, selected, arranged and/or organized on the display screen of the mobile device **11**. The image viewer application may enable the user **12** to display a single image and/or a slideshow of multiple images on the display screen of the mobile device **11**. The user **12** may use the set of controls and indications **35** to enable transfer of the media content **15** from the image viewer application to a target rendering device of the available rendering devices, such as, for example, the rendering devices **21**,**22**,**23**. As a result, the single image and/or the slideshow displayed on the display screen of the mobile device **11** may transfer to the target rendering device for rendering. An additional image and/or an additional slideshow may be transferred from the image viewer application to the target rendering device based on user selection of the additional image and/or the additional slideshow within the user interface **31** of the image viewer application. If transfer of the media content **15** is enabled using the set of controls and indications **35**, images and/or slideshows selected and/or displayed using the user interface **31** of the image viewer application may transfer from the image viewer application to the target rendering device for display. The user **12** may use

the set of controls and indication **35** to disable transfer of the media content **15** from the image viewer application to the target rendering device. As a result, an image and/or a slideshow subsequently selected and/or subsequently displayed by the user interface **31** of the image viewer application may not transfer to the target rendering device.

[0092] As a second example of use of the set of controls and indications **35**, the media application may be a music player application which may enable music files accessible by the mobile device **11** to be identified, organized, arranged into playlists and/or rendered using the mobile device **11**. The user **12** may use the set of controls and indications **35** to enable transfer of the media content **15** from the music player application to a target rendering device of the available rendering devices, such as, for example, the rendering devices **21**,**22**,**23**. As a result, music files and/or playlists selected, used and/or played in the music player application may transfer to the target rendering device for rendering. The user **12** may use the media controls **42** of the user interface **31** of the music player application to identify, organize, arrange, and/or play additional music files. As a result, the additional music files may transfer from the music player application to the target rendering device for rendering. The user **12** may use the media controls **42** to control the rendering by the target rendering device. For example, the media controls **42** may enable the user **12** to pause, play, rewind, fast forward, skip to a previous music file, skip to a next music file and/or the like. The media controls **42** may control rendering of music files on the mobile device **11** if the transfer of the media content **15** to the target rendering device is disabled using the set of controls and indications **35**. The media controls **42** may control the rendering of the music files on the target rendering device if the transfer of the media content **15** to the target rendering device is enabled using the set of controls and indications **35**. The user **12** may use the set of controls and indications **35** to disable the transfer of the media content **15** from the music player application to the target rendering device. As a result, music files and/or playlists subsequently selected, used and/or played in the music player application may not transfer to the target rendering device for rendering.

[0093] As a third example of use of the set of controls and indications **35**, the media application may be a web browser application which may enable the user **12** to browse web pages. The web pages may contain internet media content which may be rendered, may be identifiable and/or may be retrievable by the web browser application. The web browser application may enable the user **12** to select the internet media content from one or more displayed web pages to form the "media in context." The user **12** may use the set of controls and indications **35** to enable transfer of the "media in context" to a target rendering device of the available rendering devices, such as, for example, the rendering devices **21**,**22**,**23**. As a result, the "media in context" may transfer from the web browser application to the target rendering device for rendering. The web browser application may provide the media controls **42** for controlling the rendering of the media content **15** on the target rendering device. For example, the web browser application may provide video playback controls, such as, for example, pause, play, fast forward, rewind, stop and/or the like. The user **12** may browse additional web pages, and/or the user **12** may select additional media content accessible using the additional web pages. Thus, the user **12** may add to and/or may change the "media in context." The additional media content selected by the user **12** may transfer from the web browser application to the target rendering device for rendering. The user **12** may use the set of controls and indications **35** to disable transfer of the media content from the web browser application to the target rendering device. As a result, the transfer of the media content to the target rendering device may be stopped, and/or the media content subsequently selected in the web browser application may not transfer to the target rendering device for rendering.

[0094] Accordingly, the set of controls and indications **35** may be used to enable, disable, direct and/or configure the transfer of the media content to a target rendering device. However, the transfer of the media content may or may not originate from and/or flow through the mobile device **11**. If the "media in context" in the media application is locally stored on the mobile device **11**, the media content may be transferred from the mobile device **11** to the target rendering device using the home network **20**. Alternatively, if the "media in context" in the media application is not stored locally on the mobile device **11**, the media content may or may not flow through the mobile device **11** if the transfer of the media content to a target rendering device is enabled using the set of controls and indications **35**.

[0095] For example, the mobile device **11** may access and/or obtain the media content from a remote content service using a 3G carrier network for use in a media application on the mobile device **11**. Then, the mobile device **11** may relay the media content to the target rendering device using the home network **20**. In this case, the media content from the remote content service may flow through the mobile device **11** if the transfer of the media content is enabled using the set of controls and indications **35**.

[0096] In another example, the mobile device **11** may access the media content stored on a media server in the home network **20** for use in a media application on the mobile device **11**. In this case, the mobile device **11** may instruct the target rendering device to obtain the media content directly from the media server in the home network **20** if the transfer of the media content is enabled using the set of controls and indications **35**.

[0097] In either example, the mobile device **11** may act as a Control Point to control the rendering of the media content on the target rendering device based on user input on the mobile device **11**.

[0098] FIGS. **3**, **4**, and **5** provide general illustrations of the set of controls and indications **35** in embodiments of the present invention. The form of the various control and/or indication elements presented in these figures and in the other figures herein may vary by embodiment. As a first example, a control and/or indication element may be a touchable button displayed on a touchscreen embodiment of the user interface **31**. As a second example, a control and/or indication element may be a softkey option which may display a graphic indication which may be invoked by pressing a physical softkey button on the mobile device **11**. As a third example, a control and/or indication element may be invoked using a corresponding dedicated physical button on the mobile device **11**. As a fourth example, a control and/or indication element may be an element of the user interface **31** which may be capable of being selected, such as, for example, using a trackball, a directional pad, a 5-way navigation pad, an up-down scroll wheel and/or another pointing and/or selection mechanism which may be provided by the mobile device **11**. The present invention is not limited to a specific embodiment of the control and/or indication elements, and one having ordinary skill

in the art will recognize various other means by which such user interface elements may be displayed, may be presented, may be selected and/or may be invoked.

[0099] FIG. **3** generally illustrates the set of controls and indications **35** in an embodiment of the present invention. As shown in FIG. **3**, the set of controls and indications **35** may have at least three functional elements which may be presented in close proximity to each other in the user interface **31** of the media application. The three functional elements may be a media transfer control **51**, a media transfer indication **52**, and a renderer selection control/indication **53**. The set of controls and indications **35**, such as, for example, the media transfer control **51**, the media transfer indication **52**, and/or the renderer selection control/indication **53**, may be visible in the user interface **31** and/or may be invoked by the user **12**.

[0100] The media transfer control **51** may be used to enable and/or disable the transfer of the media content **15** from the media application to the target rendering device in the home network **20**. If the transfer of the media content **15** is possible but is currently disabled, the user **12** may invoke the media transfer control **51** to enable the transfer of the media content **15** from the media application to the target rendering device. As a result, the "media in context" in the media application may transfer to the target rendering device for rendering. If the transfer of the media content **15** is currently enabled, the user **12** may invoke the media transfer control **51** to disable the transfer of the media content **15** from the media application to the target rendering device. As a result, the transfer of the media content **15** to the target rendering device may be stopped, and/or the target rendering device may stop rendering the media content **15**.

[0101] The media transfer control **51** may be represented in the user interface **31** of the media application by a visual representation, such as, for example, text, a graphic symbol and/or an icon, a combination of text and graphics, and/or the like. As depicted in FIG. **3**, the media transfer control **51** may be labeled with the word "Send" and/or another text label. For example, the media transfer control **51** may be labeled with "Transfer," "Play To," "Beam," "Share," "Render" and/or another text label. The present invention is not limited to a specific embodiment of the visual representation of the media transfer control **51**.

[0102] In an embodiment, an appearance of the media transfer control **51** may change based on whether the transfer of the media content **15** from the media application is currently enabled or disabled. For example, if the transfer of the media content **15** is disabled, the appearance of the media transfer control **51** may indicate that invocation of the media transfer control **51** will enable the transfer of the media content **15**. If the transfer of the media content **15** is enabled, the appearance of the media transfer control **51** may indicate that invocation of the media transfer control **51** will disable the transfer of the media content **15**. In an embodiment generally illustrated in FIG. **3**, the media transfer control **51** may be labeled with "Send" and/or a similar term if the transfer of the media content **15** is disabled, and/or the media transfer control **51** may instead be labeled with "Stop Sending" and/or a similar term if the transfer of the media content **15** is enabled.

[0103] The media transfer indication **52** may provide a visual indication of the state of the transfer of the media content **15** from the media application to the target rendering device. The media transfer indication **52** may indicate the state of the transfer using text, a graphical depiction, a combination of text and a graphical depiction, and/or the like.

[0104] For example, the media transfer indication **52** may not have a text label if the transfer of the media content **15** is disabled, and/or the media transfer indication **52** may have a text label, such as, for example, "Sending . . . " or "Beaming . . . ," if the transfer of the media content **15** is enabled. As another example, the media transfer indication **52** may display a first graphic symbol if the transfer is disabled and/or a second graphic symbol which is a different symbol than the first symbol if the transfer is enabled. The first graphic symbol may be, for example, empty space, a "grayed out" version of the second graphic symbol, and/or the like. The second graphic symbol may be, for example, a connection wire, an arrow, a lightning bolt, a set of arcs, a set of emanating rays, and/or any graphic symbol indicative of the transfer of the media content **15** to the target rendering device. As yet another example, the media transfer indication **52** may be a graphic symbol which may be animated if the transfer of the media content **15** is enabled. For example, the media transfer indication **52** may flash, pulsate, change color, change size, rotate and/or otherwise move to indicate the transfer of the media content **15** to the target rendering device. The media transfer indication **52** may visually indicate a continuous directed flow of dots, objects, stripes, arcs, colors, materials, and/or the like. The present invention is not limited to a specific embodiment of the media transfer indication **52**, and other text labels and/or other graphic representations may be used to indicate that the transfer of the media content **15** is disabled and/or enabled. One having ordinary skill in the art will recognize various other means by which the media transfer indication **52** may be displayed and/or presented.

[0105] The media transfer indication **52** may graphically connect the media transfer control **51** and the renderer selection control/indication **53**, and/or the media transfer indication **52** may graphically indicate a flow from the media transfer control **51** to the renderer selection control/indication **53**. Thus, the media transfer indication **52** may indicate to the user **12** that the media content **15** may be flowing from the media transfer control **51** which may represent a source of the transfer to the renderer selection control/indication **53** which may represent the target rendering device.

[0106] The renderer selection control/indication **53** may provide a graphic indication of a currently selected target rendering device, if any. Thus, if the transfer of the media content **15** is currently disabled, the user **12** may use the appearance of the renderer selection control/indication **53** to determine whether further action may be needed to select a target rendering device. If an appropriate target rendering device is already indicated, the user **12** may invoke the media transfer control **51** without a need to select a target rendering device. If the user **12** determines that selection of a target rendering device is necessary, the user **12** may invoke the renderer selection control/indication **53** to access a list of available rendering devices as described in more detail hereafter.

[0107] The form of the media transfer control **51** and/or the renderer selection control/indication **53** and the method by which the user **12** may invoke the media transfer control **51** and/or the renderer selection control/indication **53** may vary by embodiment. As a first example, the media transfer control **51** and/or the renderer selection control/indication **53** may be a touchable button displayed on a touchscreen embodiment of the user interface **31**. As a second example, the media transfer control **51** and/or the renderer selection control/indication **53** may be a softkey option which may be invoked by pressing a

corresponding physical softkey button on the mobile device **11**. As a third example, the media transfer control **51** and/or the renderer selection control/indication **53** may be invoked using a corresponding dedicated physical button on the mobile device **11**. As a fourth example, the media transfer control **51** and/or the renderer selection control/indication **53** may be an element of the user interface **31** which may be capable of selection. For example, the media transfer control **51** and/or the renderer selection control/indication **53** may be selected using a trackball, a directional pad, a 5-way navigation pad, an up-down scroll wheel and/or another pointing and/or selection mechanism which may be provided by the mobile device **11**. The present invention is not limited to a specific embodiment of the media transfer control **51** and the renderer selection control/indication **53**, and one having ordinary skill in the art will recognize other means by which the media transfer control **51** and the renderer selection control/indication **53**, may be displayed, presented, selected, and/or invoked.

[0108] The renderer selection control/indication **53** may indicate the current target rendering device using a text label, a graphic symbol or icon, a combination of text and graphics, and/or the like. As shown in FIG. **3**, a graphic depiction of a television may be combined with a text label to indicate that the current rendering device is a television located in the living room. The user **12** may invoke the media transfer control **51** to enable the transfer of the "media in context" from the media application to the living room television. Alternatively, the user **12** may invoke the renderer selection control/indication **53** to select a different target rendering device.

[0109] The renderer selection control/indication **53** may have a form which may indicate that no target rendering device is available and/or currently selected. For example, the renderer selection control/indication **53** may have an empty box, a question mark, an "X" and/or a similar symbol in the absence of a target rendering device. Alternatively or additionally, the renderer selection control/indication **53** may display a text label, such as, for example, "No Renderer," to indicate that no target rendering device is currently available and/or selected.

[0110] In a preferred embodiment, the set of controls and indications **35** may display a representation of an appropriate target rendering device regardless of whether the user **12** has selected a target rendering device. For example, the set of controls and indications **35** may display a representation of an available target rendering device which may be appropriate for the "media in context" of the media application. If the user **12** selects a photo slideshow in the media application, the set of controls and indications **35** may display a representation of an available rendering device appropriate for displaying a photo slideshow. If the user **12** selects a music album in the media application, the set of controls and indications **35** may display a representation of an available rendering device appropriate for playing music. If multiple available rendering devices are appropriate for the "media in context," the set of controls and indications **35** may display a representation of a preferred rendering device from the available rendering devices appropriate for the "media in context." The preferred rendering device may be selected based on settings and/or preferences configurable by the user **12**, a number of times the available rendering devices were previously selected and/or used, which available rendering devices were recently used, and/or the like. The present invention is not limited to a specific method of determining the preferred rendering device for the "media in context."

[0111] In an embodiment, the set of controls and indications **35** may periodically update the representation of the current target rendering device to reflect changes to the "media in context" in the media application. For example, if the media application is a slideshow editor, and/or the user **12** creates a slideshow having only digital photographs, the set of controls and indications **35** may display a representation of a digital photo frame capable of displaying the digital photographs as the target rendering device. Subsequently, the user **12** may add audio background music to the slideshow. The set of controls and indications **35** may determine that the digital photo frame is not capable of rendering the audio background music. As a result, the set of controls and indications **35** may update the renderer selection control/indication **53** to indicate that the target rendering device was changed to a digital television capable of rendering the slideshow having both the digital photographs and the audio background music. Thus, the set of controls and indications **35** may adapt to changes in the "media in context."

[0112] In an embodiment, the set of controls and indications **35** may periodically update the representation of the target rendering device based on the available rendering devices. Rendering devices may be added to and/or may be removed from the home network **20**, and the mobile device **11** may identify the additions and/or the deletions. For example, the mobile device **11** may use the standard UPnP discovery protocol to determine changes to the available rendering devices. If the current target rendering device becomes unavailable, the set of controls and indications **35** may indicate a change to a different target rendering device and/or may indicate that no appropriate target rendering device is available. If a new rendering device becomes available and/or may be preferable to the current target rendering device, the set of controls and indications **35** may indicate that the new rendering device is the target rendering device.

[0113] In different embodiments, the arrangement of the three functional elements may differ from that shown in FIG. **3**. For example, the three functional elements may be arranged vertically rather than horizontally or may be arranged in a triangular shape. The order of the three functional elements within the set of controls and indications **35** may also vary based on the embodiment. The location of the set of controls and indications **35** in the user interface **31** of the media application may vary in different embodiments. The present invention is not limited to a specific arrangement or ordering of the three functional elements or to a specific location of the set of controls and indications **35** in the user interface **31** of the media application.

[0114] FIG. **4** generally illustrates the set of controls and indications **35** in an embodiment of the present invention. As shown in FIG. **4**, the media transfer control **51** and the media transfer indication **52** may be combined into a single functional element, such as, for example, a media transfer control/indication **61**. Thus, in an embodiment, the set of controls and indications **35** may have at least two functional elements, such as, for example, the media transfer control/indication **61** and the renderer selection control/indication **53**. The two functional elements, such as, for example, the media transfer control/indication **61** and the renderer selection control/indication **53**, may be displayed adjacent to each other in the user interface **31**.

[0115] The media transfer control/indication **61** may be used to enable and/or disable the transfer of the media content **15** from the media application to a target rendering device in the home network **20**. The media transfer control/indication **61** may have any property and/or may provide any function previously described for the media transfer control **51** and/or the media transfer indication **52**. The media transfer control/indication **61** may provide a graphic indication of the state of the transfer of the media content **15** from the media application to the target rendering device. As generally illustrated in FIG. **4**, a portion of the media transfer control/indication **61** may be used to indicate the state of the transfer, and the portion may have any property and/or any function previously described for the media transfer indication **52**.

[0116] The media transfer control/indication **61** may change form to indicate the state of the transfer of the media content **15**. For example, the media transfer control/indication **61** may pulsate, may move, may change colors, may glow, may animate and/or the like to indicate the transfer of the media content **15** from the media application to the target rendering device. As another example, the media transfer control/indication **61** may have a first static visual form to indicate that the transfer is disabled and a second static visual form which may be a different form than the first static visual form to indicate that the transfer is enabled. The present invention is not limited to a specific embodiment by which the media transfer control/indication **61** may indicate that the transfer is enabled and/or disabled.

[0117] The set of controls and indications **35** may have the renderer selection control/indication **53**. As discussed previously, the renderer selection control/indication **53** may provide a graphic indication of the currently selected target rendering device, if any. If the user **12** determines that selection of a target rendering device is necessary, the user **12** may invoke the renderer selection control/indication **53** to access a list of available rendering devices as described in more detail hereafter.

[0118] FIG. **5** generally illustrates the set of controls and indications **35** in an embodiment of the present invention. As shown in FIG. **5**, the set of controls and indications **35** may be combined into a single functional element, such as, for example, a single control/indication element **71**. For example, the media transfer control **51**, the media transfer indication **52** and the renderer selection control/indication **53** may be combined into the single control/indication element **71**. The single control/indication element **71** may be presented and/or displayed in the user interface **31** of the media application.

[0119] The single control/indication element **71** may have a compact form which may enable a small display screen of the mobile device **11** to display the single control/indication element **71** without hindering display of the media content **15** on the display screen. Further, if space on the display screen is minimal because the user interface **31** of the media application has many interface elements, the compact form of the single control/indication element **71** may enable the mobile device **11** to display the single control/indication element **71**.

[0120] In a preferred embodiment, the user interface **31** may present a first method for invoking the single control/indication element **71** and a second method for invoking the single control/indication element **71** which may be different methods for invoking the single control/indication element **71**. The first method for invoking the single control/indication element **71** may invoke functions of the media transfer control **51**. For example, the user **12** may use the first method for invoking the single control/indication element **71** to enable and/or disable the transfer of the media content **15** to the target rendering device. The second method for invoking the single control/indication element **71** may invoke functions of the renderer selection control/indication **53**. For example, the user may use the second method for invoking the single control/indication element **71** to access a list of available rendering devices to specify a new target rendering device as described in more detail hereafter.

[0121] In a first example, the single control/indication element **71** may be presented as a touchable button displayed on a touch screen embodiment of the user interface **31**. The first method for invoking the single control/indication element **71** may be to tap the touchable button, for example. By tapping the touchable button, the user **12** may enable and/or disable the transfer of the media content **15** to the target rendering device. The second method for invoking the single control/indication element **71** may be to press and hold the touchable button for a period of time, for example. By pressing and holding the touchable button for a period of time, the user **12** may access controls for selecting a new target rendering device from the available rendering devices. The controls for selecting a new target rendering device may be, for example, the functions of the renderer selection control/indication **53**.

[0122] In a second example, the single control/indication element **71** may be displayed as a softkey option which may be invoked by pressing a corresponding physical key on the mobile device **11**. The first method for invoking the single control/indication element **71** may be to tap the corresponding physical key, for example. By tapping the corresponding physical key, the user **12** may enable and/or disable the transfer of the media content **15** to the target rendering device. The second method for invoking the single control/indication element **71** may be to press and hold the corresponding physical key for a period of time, for example. By pressing and holding the corresponding physical key for a period of time, the user **12** may access the controls for selecting a new target rendering device from the available rendering devices. The controls for selecting a new target rendering device may be, for example, the functions of the renderer selection control/indication **53**.

[0123] In a third example, the single control/indication element **71** may be displayed in the user interface **31** of the media application as an interface element which may be selected and/or may be "clicked" using a pointing mechanism. For example, the single control/indication element **71** may be selected and/or may be clicked using a trackball, a joystick, a 5-way navigation pad, a 4-way directional pad, a scroll wheel, a mouse and/or the like. The first method for invoking the single control/indication element **71** may be to "single-click" the single control/indication element **71**, for example. By selecting and single-clicking the single control/indication element **71**, the user **12** may enable and/or disable the transfer of the media content to the target rendering device. The second method for invoking the single control/indication element **71** may be to "double-click" the single control/indication element **71**, for example. By selecting and double-clicking the single control/indication element **71**, the user **12** may access the controls for selecting a new target rendering device from the available rendering devices. The controls for selecting a new target rendering device may be, for example, the functions of the renderer selection control/indication **53**.

[0124] Although the single control/indication element **71** may use two different and distinguishable methods of invocation, the present invention is not limited to specific methods of invocation. One having ordinary skill in the art will recognize other means by which the single control/indication element **71** may be invoked in two or more different and distinguishable methods.

[0125] The appearance of the single control/indication element **71** may indicate the current target rendering device, if any. For example, the single control/indication element **71** may indicate the current target rendering device using a text label, a graphic symbol or icon, a combination of a text label and a graphic symbol or icon, and/or the like. The single control/indication element **71** may indicate that no target rendering device is currently selected and/or currently available.

[0126] As described previously for the renderer selection control/indication **53**, the single control/indication element **71** may display a representation of an appropriate target rendering device regardless of whether the user **12** has selected a target rendering device. The single control/indication element **71** may update the target rendering device based on the "media in context" in the media application, based on identification of newly available and/or newly unavailable rendering devices in the home network **20**, and/or the like. The single control/indication element **71** may display a representation for a target rendering device determined based on settings and/or preferences configurable by the user **12**, the number of times the available rendering devices were previously selected and/or used, which available rendering devices were recently used, and/or the like. The present invention is not limited to a specific method of determining the target rendering device.

[0127] The single control/indication element **71** may indicate the state of the transfer of the media content **15** from the media application to the target rendering device. The single control/indication element **71** may indicate the state using text, a graphic depiction, a combination of text and a graphic depiction, a change in appearance of the single control/indication element **71**, an animated appearance of the single control/indication element **71**, and/or the like.

[0128] The single control/indication element **71** may have a first display style to indicate that the transfer of the media content **15** is disabled, and the single control/indication element **71** may have a second display style which may be a different style than the first display style to indicate that the transfer of the media content **15** is enabled. For example, the first display style may be "grayed out," and/or the second display style may not be "grayed out." As another example, the second display style may be highlighted relative to the first display style. As a third example, the second display style may be larger than the first display style.

[0129] The single control/indication element **71** may add a graphic element to the appearance of the single control/indication element **71** to indicate that the transfer of the media content **15** is enabled. For example, the single control/indication element **71** may add an arrow, a lightning bolt, a series of arcs, a set of emanating rays, a visible aura, and/or the like to indicate that the transfer of the media content **15** is enabled. The single control/indication element **71** may not display the graphic element and/or may display a different graphic element to indicate that the transfer of the media content **15** is disabled.

[0130] The single control/indication element **71** may use animation to indicate that the transfer of the media content **15** is enabled. For example, the single control/indication element **71** may be displayed in a static form if the transfer of the media content **15** is disabled and/or may be animated to indicate that media content **15** is transferring to the target rendering device. An animated graphic element may be added to the appearance of the single control/indication element **71** if the transfer of the media content **15** is enabled. Alternatively, the representation of the target rendering device in the single control/indication element **71** may be animated. The representation of the target rendering device may flash, may pulsate, may vibrate, may change colors, may move and/or the like to indicate that the media content **15** is transferring to and/or rendering on the target rendering device. For example, the representation of a stereo device may be animated to depict musical notes emanating from the speakers to indicate that the media content **15** is transferring to and/or rendering on the stereo device. As a second example, the representation of a television device may display a thumbnail version of the media content **15** to indicate that the media content **15** is transferring to and/or rendering on the television device.

[0131] In an embodiment, the media transfer indication **52** and the renderer selection control/indication **53** may be combined into a user interface element (not shown in the figures). Thus, the set of controls and indications **35** may be formed by the media transfer control **51** and the interface element which combines the media transfer indication **52** and the renderer selection control/indication **53**. The interface element which combines the media transfer indication **52** and the renderer selection control/indication **53** may indicate the state of the transfer of the media content **15** and may provide the functions of the renderer selection control/indication **53**.

[0132] In an embodiment, the media application may change a state of the media application. The media application may cause one or more of the media controls **42** to be invoked in response to user input, which selects and/or invokes the one or more of the media controls **42** in the set of controls and indications **35**. For example, the media application may have an internal state for media playback on the mobile device **11**, and/or the internal state may be set to "PLAY" to indicate that media content is playing on the mobile device **11** or set to "PAUSE" to indicate that the media playback is paused on the mobile device **11**. The user **12** may enable transfer of the media content to a target rendering device by invoking the media transfer control **51**, the media transfer control/indication **61** and/or the single control/indication element **71** when the media application has the internal state set to "PAUSE." In response, the media application may change the internal state from "PAUSE" to "PLAY" and/or may take other actions associated with selection and/or invocation of a "play" control in the media controls **42**. As a result, the media application may begin and/or may resume rendering of the media content on the mobile device **11** substantially simultaneously with the transfer to and/or the rendering of the media content on the target rendering device. In a similar fashion, the media application may change the internal state from "PLAY" to "PAUSE" in response to the user **12** disabling the transfer of the media content to the target rendering device by invoking the media transfer control **51**, the media transfer control/indication **61** and/or the single control/indication element **71**.

[0133] FIG. **6** generally illustrates a renderer menu **75** which may be displayed in the user interface **31** of the media

application in an embodiment of the present invention. The renderer menu **75** may display a list **77** of available rendering devices. The list **77** of available rendering devices may have one or more rendering devices, such as, for example, one or more of the rendering devices **21**,**22**,**23**. The renderer menu **75** and/or the list **77** may enable the user **12** to select a new target rendering device from the available rendering devices. The renderer menu **75** may appear, may be accessed and/or may be used in response to the user **12** invoking the renderer selection control/indication **53** and/or in response to the user **12** invoking the single control/indication element **71** using the second method for invoking the single control/indication element **71**.

[0134] As generally illustrated in FIG. **6**, the list **77** of available rendering devices may have representations for a gaming console, a PC, a digital photo frame and a television. The list **77** of available rendering devices may vary based on the embodiment of the media application and the available rendering devices, and the present invention is not limited to a specific embodiment of the renderer menu **75** or the list **77**.

[0135] The renderer menu **75** and/or the list **77** may display representations for the available rendering devices using a text label, a graphic symbol and/or icon, a combination of a text label and a graphic symbol and/or icon, and/or the like. The arrangement of the representations of the available rendering devices may vary based on the embodiment of the media application. For example, the renderer menu **75** and/or the list **77** may arrange the representations of the available rendering devices horizontally and/or in a grid. As another example, the renderer menu **75** and/or the list **77** may be displayed as a carousel of graphic icons. The renderer menu **75** may provide additional tools and/or additional options for navigating and/or selecting among the available rendering devices. For example, if the list **77** is larger than the size of the display screen of the mobile device **11**, the renderer menu **75** may provide scrolling controls to navigate through the list **77**. The present invention is not limited to a specific method of displaying, navigating and/or selecting from the list **77** of available rendering devices.

[0136] The renderer menu **75** may display a subset of the available rendering devices in the home network **20**. The subset may be determined based on settings and/or preferences established by the user **12** and/or the "media in context" in the media application. The subset may depend on other factors, such as, for example, the number of times the available rendering devices were previously selected and/or used, which available rendering devices were recently used for media types present in the "media in context," which available rendering devices were recently used for media transfer, and/or the like.

[0137] In an embodiment, the subset of the available rendering devices displayed in the renderer menu **75** may be the available rendering devices which are capable of and/or suitable for rendering the "media in context" of the media application. In another embodiment, the media application may display a full set of the available rendering devices in the renderer menu **75** and/or may graphically distinguish the available rendering devices which are suitable for rendering the "media in context" from the available rendering devices which are not suitable for rendering the "media in context." For example, the renderer menu **75** may display the full set of the available rendering devices and may "gray out" the rendering devices which are not capable of and/or not suitable for rendering the "media in context."

[0138] In yet another embodiment, the media application may arrange the rendering devices in the renderer menu **75** in an order based on the suitability of the rendering devices for rendering the "media in context." For example, if the "media in context" is a set of digital music files, the media application may display a dedicated audio rendering device, such as, for example, a high quality digital stereo system, at a higher position in the list **77** relative to a multipurpose rendering device, such as, for example, a digital television. Accordingly, the media application may indicate that the high quality digital stereo system may be more suitable for rendering the set of digital music files relative to the digital television.

[0139] The renderer menu **75** may display renderer settings controls **79** for one or more of the available rendering devices. The user **12** may invoke one of the renderer settings controls **79** to access and/or modify settings for the one of the available rendering devices associated with the one of the renderer settings controls **79**. For example, a digital photo frame may have settings for an amount of time to display each photograph in a slideshow, for whether to stretch photos or maintain an aspect ratio of the photos, for brightness of display, and/or the like. As another example, a stereo device may have settings for a playback volume, for equalizer controls, for surround sound effects, and/or the like. As yet another example, the available rendering devices may have settings for defining, modifying and/or personalizing visual representations of the available rendering devices in the set of controls and indications **35** and/or the renderer menu **75**. For example, a graphic icon and/or a text label used to represent a rendering device may be defined, modified and/or selected by the user **12**. The present invention is not limited to specific settings which may be accessed and/or modified by the user **12** using the renderer settings controls **79**.

[0140] The set of controls and indications **35** may indicate network errors and/or other problems which may prevent the rendering of the media content **15**. The set of controls and indications **35** may enable the user **12** to correct the network errors and/or the other problems. FIGS. **7**A, **7**B and **7**C generally illustrate an error indication **80**, error information **81**, and an error correction control **82** which may be used by the set of controls and indications **35** in an embodiment of the present invention. The error indication **80** may inform the user **12** of the existence of an error condition. The error information **81** may provide information so that the user **12** may understand the nature and/or the cause of the error condition. The error correction control **82** may provide a means to resolve the error condition so that a successful media transfer may be enabled.

[0141] FIG. **7**A illustrates an embodiment of the set of controls and indications **35** which may indicate network errors and/or other problems and/or may enable the user **12** to correct the network errors and/or the other problems. For example, the embodiment depicted in FIG. **7**A may be implemented by the embodiment of the set of controls and indications **35** generally illustrated in FIG. **3**. The error indication **80** may be displayed as an "X" on the media transfer indication **52**, for example. The error indication **80** may indicate visually that the transfer of the media content **15** is not currently possible due to an error condition. The error information **81** may be displayed as a text label which may replace the renderer selection control/indication **53**. For example, as shown in FIG. **7**A, the text label may state "Wi-Fi not available." The error correction control **82** may be displayed as a selectable and/or invocable element which may replace the

media transfer control **51**. As shown in FIG. **7**A, the error correction control **82** may have a text label, such as, for example, "Fix," which may indicate that the error condition may be corrected by invoking the error correction control **82**. For example, by invoking the error correction control **82**, the user **12** may access options to activate the Wi-Fi connection capabilities of the mobile device and/or select an available Wi-Fi network to establish a connection, identify the available rendering devices and/or enable the transfer of the media content **15**.

[0142] FIG. **7**B illustrates an embodiment of the set of controls and indications **35** which may indicate network errors and/or other problems and/or may enable the user **12** to correct the network errors and/or the other problems. For example, the embodiment depicted in FIG. **7**B may be implemented by the embodiment of the set of controls and indications **35** generally illustrated in FIG. **4**. As another example, the embodiment depicted in FIG. **7**B may be implemented by the previously discussed embodiment of the set of controls and indications **35** formed by the media transfer control **51** and the interface element which combines the media transfer indication **52** and the renderer selection control/indication **53**.

[0143] As shown in FIG. **7**B, the error indication **80** may be displayed as a triangle symbol containing an exclamation point, for example. The error information **81** may be displayed as a text label, such as, for example, "No Network Available." The combination of the error indication **80** and the error information may be displayed instead of the renderer selection control/indication **53**. The error correction control **82** may be displayed as a selectable and/or invocable element which may replace the media transfer control **51**. The error correction control **82** may have a text label, such as, for example, "Connect," which may indicate that the error condition may be corrected by invoking the error correction control **82**. For example, by invoking the error correction control **82**, the user **12** may connect the mobile device **11** to the home network **20**, may identify the available rendering devices and/or may enable the transfer of the media content **15**.

[0144] FIG. **7**C illustrates an embodiment of the set of controls and indications **35** which may indicate network errors and/or other problems and/or may enable the user **12** to correct the network errors and/or the other problems. For example, the embodiment depicted in FIG. **7**C may be implemented by the embodiment of the set of controls and indications **35** generally illustrated in FIG. **5**. The error indication **80**, the error information **81** and/or the error correction control **82** may be combined into a single error indication/correction element **83** which may be displayed instead of the single control/indication element **71**.

[0145] As shown in FIG. **7**C, the error indication **80** and the error information **81** may be combined into the single error indication/correction element **83** which may be, for example, a graphic symbol which may indicate a connection problem. Error correction control capability may be indicated with a text label which may instruct the user **12** that the connection problem may be fixed by tapping the control element. For example, the user **12** may tap the single error indication and correction element **83** using a touchscreen available on the mobile device **11**. By invoking the single error indication and correction element **83**, the user **12** may access options to correct the connection problem, to restore the connection, to identify the available rendering devices, and/or to enable a subsequent media transfer to a target rendering device.

[0146] In an embodiment, the media application may update the error indication **80**, the error information **81** and/or the error correction control **82** to reflect the presence or the absence of network errors and/or other problems. For example, the presence or the absence of network errors and/or other problems may be indicated to the user **12** regardless of whether the user **12** has invoked any of the set of controls and indications **35** during a current rendering session.

[0147] In an embodiment, the media application may update the error indication **80**, the error information **81** and/or the error correction control **82** in response to user input on the mobile device **11**. For example, the user **12** may invoke the media transfer control **51** to enable the transfer of the media content to a target rendering device. As a result, the media application may direct the target rendering device to begin rendering the media content and/or may discover the network error and/or the other problem which may prevent the target rendering device from rendering the media content. If the media application discovers the network error and/or the other problem, the media application may update the set of controls and indications **35** to present the error indication **80**, the error information **81** and/or the error correction control **82**.

[0148] In an embodiment, the media application may indicate the network error and/or the other problem using means other than and/or in addition to the error indication **80**, the error information **81** and/or the error correction control **82**. For example, the media application may display an error window, a dialog box, a popup message and/or the like to inform the user **12** of the network error and/or the other problem discovered by the media application. The present invention is not limited to a specific embodiment of the means of indicating error conditions to the user **12**.

[0149] In an embodiment, the set of controls and indications **35** may be used in typical media applications on the mobile device **11**. FIG. **8** generally illustrates a typical user interface **100** of an image viewer application on the mobile device **11**. The image viewer application may enable the user **12** to access and/or view images, such as, for example, digital photographs which may be stored on and/or accessible to the mobile device **11**. The typical user interface **100** of the image viewer application may have an image viewing area **105**. The image viewer application may display one or more available image objects **110** in the image viewing area **105**. The image viewer application may have a selected image **111** which may be highlighted, displayed centrally and/or displayed in another distinguishing way. The typical user interface **100** may have image viewer controls **115** which may enable the user **12** to browse, select, organize, manipulate and/or view the available image objects **110**. For example, the image viewer controls **115** may navigate through the available image objects **110**, search for an image in the available image objects **110**, arrange a plurality of the available image objects **110** into an album and/or a slideshow, rate an image, mark an image as a favorite, sort and/or retrieve images based on ratings and/or favorites, and/or the like. The image viewer controls **115** may enable the user **12** to play an album or a slideshow in automatic fashion on the display screen of the mobile device **11**. The typical user interface **100** of the image viewer application may have other controls and/or functions not presented here.

[0150] The image viewer application may lack controls and/or functions for transferring the media content **15** to the available rendering devices in the home network **20**. The set

of controls and indications **35** may enable the image viewer application to transfer the media content **15** to the available rendering devices in the home network **20** in an embodiment of the present invention. FIG. **9** generally illustrates a user interface **200** of the image viewer application in an embodiment of the present invention. The user interface **200** may be formed by addition of the set of controls and indications **35** to the typical user interface **100** of the viewer application. The image viewer controls **115** of the typical user interface **100** may have been minimally rearranged to create space on the user interface **200** for the set of controls and indications **35**. As generally illustrated in FIG. **9**, the set of controls and indications **35** of the user interface **200** of the image viewer application may be based on the embodiment of the set of controls and indications **35** depicted in FIG. **3**. However, any of the forms and the illustrations of the set of controls and indications **35** presented herein may be added to the typical user interface **100** of the image viewer application to form the user interface **200**, and the present invention is not limited to a specific embodiment of the set of controls and indications **35** added to the typical user interface **100** of the image viewer application to form the user interface **200**.

[0151] In an embodiment, the set of controls and indications **35** may provide the media transfer control **51**, the media transfer indication **52** and the renderer selection control/indication **53**. In this embodiment, the user **12** of the image viewer application may access all of the controls, the functions and/or the indications of the set of controls and indications **35** described herein.

[0152] For example, the user **12** may execute the image viewer application to access and/or view digital photographs available on the mobile device **11**. The user **12** may select, may organize and/or may arrange the digital photographs using the image viewer controls **115**. The user **12** may manually browse and/or may view the digital photographs on the display screen of the mobile device **11**. Alternatively, the user **12** may display the digital photographs using an automatic display option, such as, for example, "Play Album," "Play Slideshow," and/or the like. Thus, the user **12** may experience the digital photographs using the display screen of the mobile device **11**.

[0153] The user **12** may view a representation of the current target rendering device displayed by the renderer selection control/indication **53** in the user interface **200**. As described previously, the indicated target rendering device may be selected for display in the set of controls and indications **35** based on user settings and/or preferences, historical records of previous media transfers, identification of the available rendering devices in the home network **20**, and/or the "media in context" in the image viewer application, for example. Accordingly, the renderer selection control/indication **53** may display a representation of a target rendering device despite the user **12** not selecting and/or not specifying a target rendering device in a current image viewing session. The user **12** may accept the target rendering device without further selection and/or specification of a target rendering device. Alternatively, the user **12** may invoke the renderer selection control/indication **53** to select a new target rendering device.

[0154] The user **12** may invoke the media transfer control **51** in the user interface **200** to enable the transfer of the media content **15** to the target rendering device. As a result, the "media in context" in the image viewer application may initiate transfer to and/or rendering on the target rendering device. The "media in context" may be the selected image **111**, a set of selected images, a set of all available images, a set of "favorite" images, an album and/or a slideshow currently rendering on the mobile device **11**, and/or the like. The "media in context" may vary between media applications. The present invention is not limited to a specific embodiment of the "media in context" or the means by which the media application may identify the "media in context."

[0155] If the transfer of the media content **15** is enabled using the set of controls and indications **35**, the user **12** may utilize the image viewer controls **115** to browse, discover, select, organize, and/or view additional images and/or additional sets of images. As a result, the additional images and/or the additional sets of images may transfer from the image viewer application to the target rendering device for rendering.

[0156] If the transfer of the media content **15** is enabled, the user **12** may invoke the renderer selection control/indication **53** to select a new target rendering device. As a result, the transfer to and/or the rendering of the media content **15** on the initial target rendering device may be stopped, and/or the transfer to and/or the rendering of the media content **15** on the new target rendering device may begin.

[0157] If the transfer of the media content **15** is enabled, the user **12** may invoke the media transfer control **51** in the user interface **200** to disable the transfer of the media content **15** to the target rendering device. As a result, the transfer of the media content **15** to the target rendering device may be stopped, and/or the target rendering device may stop rendering the media content **15** from the image viewer application.

[0158] The user **12** may invoke the renderer selection control/indication **53** in the user interface **200** to select a new target rendering device. As a result, as generally illustrated in FIG. **10**, the image viewer application and/or the set of controls and indications **35** may display the renderer menu **75**. The renderer menu **75** may have the list **77** of available rendering devices. The renderer menu **75** may highlight, emphasize and/or otherwise indicate a representation **119** of the currently selected target rendering device. The renderer menu **75** may display a control **120** in the user interface **200** for closing the renderer menu **75** without changing the target rendering device. The user **12** may select a new target rendering device using the renderer menu **75**. Alternatively, the user **12** may close the renderer menu **75** without selecting a new target rendering device.

[0159] The image viewer application may encounter an error condition which may prevent the transfer of the media content **15** to the available rendering devices in the home network **20**. The user interface **200** of the image viewer application and/or the set of controls and indications **35** may indicate the error condition, may provide information about the error condition, and/or may present a means for correcting and/or resolving the error condition. Methods for indicating, informing and/or correcting the error condition may be used by the set of controls and indications **35** as previously described.

[0160] FIG. **11** generally illustrates a user interface **130** of a video player application which may have the set of controls and indications **35**. As generally illustrated in FIG. **11**, the set of controls and indications **35** added to the user interface **130** of the video player application may be based on the embodiment of the set of controls and indications **35** depicted in FIG. **4**. However, any of the forms and the illustrations of the set of controls and indications **35** presented herein may be added to the user interface **130** of the video player application. The

presented invention is not limited to a specific embodiment of the set of controls and indications **35** added to the user interface **130** of the video player application.

[0161] In an embodiment, the set of controls and indications **35** may provide the media transfer control/indication **61** and the renderer selection control/indication **53**. In this embodiment, the user **12** of the video player application may access all of the controls, the functions and/or the indications of the set of controls and indications **35** described herein.

[0162] For example, the user **12** may execute the video player application to access and/or view video content which may be stored locally on the mobile device **11** and/or may be accessible to the mobile device **11** using a network connection. The user **12** may identify, browse, select, arrange, edit and/or use the video content using video player controls **131**. The user **12** may control the rendering of selected video content on the display screen of the mobile device **11** using the video player controls **131**. The user **12** may render the selected video content in a playback area **135** of the display screen of the mobile device **11**. For example, as generally illustrated in FIG. **11**, the playback area **135** may be a full screen video playback area, and/or the video player controls **131** may be displayed as overlays on the video content and/or the playback area **135**. The user interface **130** of the video player application may have other forms, layouts and appearances, and the present invention is not limited to a specific embodiment of the user interface **130** of the video player application.

[0163] The user **12** may view the representation of the current target rendering device indicated by the renderer selection control/indication **53**. As described previously, an initial target rendering device may be selected for display in the set of controls and indications **35** based on user settings and/or preferences, historical records of previous media transfers, identification of available rendering devices in the home network **20**, and/or the "media in context" in the video player application, for example. Accordingly, the renderer selection control/indication **53** may display a representation of a target rendering device despite the user **12** not selecting and/or not specifying a target rendering device in a current video viewing session. The user **12** may accept the target rendering device without further selection and/or specification of a target rendering device. Alternatively, the user **12** may invoke the renderer selection control/indication **53** to select a new target rendering device.

[0164] The user may invoke the media transfer control/indication **61** to enable the transfer of the media content **15** to the target rendering device. As a result, the "media in context" in the video player application may begin transfer to and/or rendering on the target rendering device. For example, as generally illustrated in FIG. **11**, the "media in context" may transfer to and/or may be rendered on a PC device located in the den of the home as indicated by the renderer selection control/indication **53**. The "media in context" may be selected video content and/or the video content currently playing in the video player application.

[0165] If the transfer of the media content **15** is enabled using the set of controls and indications **35**, the user **12** may utilize the video player controls **131** to control the rendering of the video content on the display screen of the mobile device **11** and/or to control the rendering of the video content on the target rendering device. The user **12** may identify, may browse, may select, may arrange, may edit and/or may use additional video content using the video player controls **131**. As a result, the additional video content may transfer to and/or may be rendered by the target rendering device.

[0166] If the transfer of the media content **15** is enabled, the user **12** may invoke the renderer selection control/indication **53** to select a new target rendering device. As a result, the transfer to and/or the rendering of the media content **15** on the initial target rendering device may be stopped, and the transfer to and/or the rendering of the media content **15** on the new target rendering device may begin.

[0167] If the transfer of the media content **15** is enabled, the user **12** may invoke the media transfer control/indication **61** to disable the transfer of the media content **15** from the video player application to the target rendering device. As a result, the transfer of the media content **15** to the target rendering device may be stopped, and/or the target rendering device may stop rendering the media content **15** from the video player application.

[0168] FIG. **12** generally illustrates a user interface **140** of a music player application which may provide the set of controls and indications **35** using the single control/indication element **71** in an embodiment of the current invention. The music player application may utilize any of the forms and the illustrations of the set of controls and indications **35** presented herein, and the present invention is not limited to a specific embodiment of the set of controls and indications **35** added to the user interface **140** of the music player application. However, use of the single control/indication element **71** may be advantageous if the size of the display screen is limited. For example, the mobile device **11** may be a low-end mobile phone, a compact MP3 player, a wristwatch with music playback capabilities, and/or the like. The single control/indication element **71** may be used to provide the set of controls and indications **35** in a limited display space.

[0169] The user **12** may execute the music player application to access and/or view music content which may be stored locally on the mobile device **11** and/or which may be accessible to the mobile device **11** using a network connection. The user **11** may discover, may browse, may select, may arrange, may edit and/or may use the music content using the music player controls **141**. For example, the user **12** may arrange the music content into playlists and/or may access existing playlists to edit, use, and/or play back the playlists. The user **12** may play selected music content and/or may control the rendering of the music content on the mobile device **11** using the music player controls **141**. For example, as generally illustrated in FIG. **12**, the music player application may provide song information **142** and/or an album art image **143**. The user interface **140** of the music player application may have other forms, layouts and appearances, and the present invention is not limited to a specific embodiment of the user interface **140** of the music player application.

[0170] The user **12** may view the representation of the current target rendering device indicated by the single control/indication element **71**. As described previously, an initial target rendering device may be selected for display in the single control/indication element **71** based on user settings and/or preferences, historical records of previous media transfers, identification of available rendering devices in the home network **20**, and/or the "media in context" in the music player application, for example. Accordingly, the single control/indication element **71** may display a representation of a target rendering device despite the user **12** not selecting and/or not specifying a target rendering device in a current music listening session. The user **12** may accept the target rendering

device without further selection and/or specification of a target rendering device. Alternatively, the user **12** may invoke the single control/indication element **71** using the second method for invoking the single control/indication element **71** to select a new target rendering device.

[0171] The user may invoke the single control/indication element using the first method for invoking the single control/indication element **71** to enable the transfer of the media content **15** from the music player application to the target rendering device. As a result, the "media in context" in the music player application may begin transfer to and/or rendering on the target rendering device. The "media in context" may be the music content currently selected and/or currently playing in the music player application. The "media in context" may be music content associated with a playlist selected and/or edited in the music player application. The "media in context" may be another set of media content relevant to the user **12** of the music player application. As generally illustrated in FIG. **12**, the media content **15** may transfer to and/or may be rendered on a Zbox II device as indicated by the single control/indication element **71**.

[0172] If the transfer of the music content to the rendering device is enabled using the single control/indication element **71**, the user **12** may utilize the music player controls **141** to control the rendering of the music content on the target rendering device. The user **12** may identify, may browse, may select, may arrange, may edit and/or may use additional music content using the music player controls **141**. As a result, the additional music content may be transferred to and/or may be rendered by the target rendering device.

[0173] If the transfer of the music content from the music player application to the rendering device is enabled, the user **12** may invoke the single control/indication element **71** using the second method for invoking the single control/indication element **71** to select a new target rendering device. As a result, the transfer to and/or the rendering of the music content on the initial target rendering device may be stopped, and the transfer to and/or the rendering of music content on the new target rendering device may begin.

[0174] If the transfer of the music content from the music player application to the rendering device is enabled, the user may invoke the single control/indication element **71** using the first method for invoking the single control/indication element **71** to disable the transfer of the music content to the target rendering device. As a result, the transfer of the music content to the target rendering device may be stopped, and/or the target rendering device may stop rendering the music content from the music player application. The user **12** may continue to access, use, and/or play the music content on the mobile device if the media transfer is disabled using the single control/indication element **71**.

[0175] It should be understood that various changes and modifications to the presently preferred embodiments described herein will be apparent to those skilled in the art. Such changes and modifications may be made without departing from the spirit and scope of the present invention and without diminishing its attendant advantages. It is, therefore, intended that such changes and modifications be covered by the appended claims.

We claim:

1. A method for transferring media content from a mobile device to a home network wherein the mobile device has a user interface and further wherein the home network has rendering devices, the method comprising the steps of:

displaying a media transfer control, a media transfer indication and a renderer selection control/indication concurrently in the user interface of the mobile device during execution of a media application by the mobile device;

identifying first media content using the media application;

identifying a first target rendering device of the rendering devices in the home network wherein the renderer selection control/indication identifies the first target rendering device to a user of the mobile device;

accepting user input on the user interface of the mobile device which selects the media transfer control;

rendering the first media content on the first target rendering device in response to selection of the media transfer control; and

indicating to the user of the mobile device that the first target rendering device is rendering the first media content wherein the media transfer indication indicates to the user of the mobile device that the first target rendering device is rendering the first media content.

2. The method of claim **1** further comprising the step of:

displaying playback controls, the media transfer control, the media transfer indication and the renderer selection control/indication concurrently in the user interface of the mobile device wherein the playback controls enable the user of the mobile device to control rendering of the first media content on the first target rendering device.

3. The method of claim **1** further comprising the step of:

displaying a webpage in the user interface of the mobile device wherein the first media content is identified as internet media content selected from the webpage by the user of the mobile device.

4. The method of claim **1** further comprising the step of:

obtaining the first media content from a media server located in the home network in response to the selection of the media transfer control wherein the first target rendering device obtains the first media content from the media server in response to the selection of the media transfer control without the mobile device transmitting the first media content to the first target rendering device.

5. The method of claim **1** further comprising the step of:

transmitting the first media content from local storage on the mobile device to the first target rendering device in response to the selection of the media transfer control.

6. The method of claim **1** further comprising the step of:

transmitting the first media content from a remote content provider connected to the mobile device by a network which is a different network than the home network wherein the remote content provider transmits the first media content to the mobile device using the network and the mobile device transmits the first media content to the first target rendering device using the home network in response to the selection of the media transfer control.

7. The method of claim **1** further comprising the step of:

graphically connecting the media transfer control and the renderer selection control/indication using the media transfer indication while the first target rendering device is rendering the first media content.

8. The method of claim **1** further comprising the step of:

automatically identifying the first target rendering device from the rendering devices in the home network in response to identification of the first media content wherein the mobile device identifies the first target rendering device in response to the identification of the first

media content without selection of the first target rendering device by the user after the identification of the first media content and further wherein the first target rendering device has media capabilities which correspond to the first media content.

9. The method of claim **1** further comprising the steps of:

accepting a series of user input events on the mobile device over a time period wherein each of the user input events in the series cause changes to a set of media content selected in the media application; and

periodically updating a representation of a current target rendering device to reflect the changes to the set of media content selected in the media application wherein the renderer selection control/indication displays the representation of the current target rendering device and further wherein the representation of the current target rendering device identifies the first target rendering device when the first media content is selected in the media application.

10. The method of claim **1** further comprising the steps of:

identifying a second target rendering device of the rendering devices in the home network wherein the renderer selection control/indication identifies the second target rendering device to the user of the mobile device before identification of the first target rendering device wherein the first target rendering device and the second target rendering device are both capable of rendering the first media content; and

detecting unavailability of the second target rendering device wherein the mobile device detects the unavailability of the second target rendering device wherein the renderer selection control/indication identifies the first target rendering device to the user in response to detection of the unavailability of the second target rendering device.

11. The method of claim **1** wherein the media transfer control and the media transfer indication are a single functional element provided by the user interface of the mobile device and further wherein the single functional element provides the media transfer control and the media transfer indication.

12. The method of claim **1** wherein the media transfer control, the media transfer indication and the renderer selection control/indication are a single functional element provided by the user interface of the mobile device and further wherein a user of the mobile device uses a first invocation of the single functional element to select the media transfer control and uses a second invocation of the single functional element to select the renderer selection control/indication wherein the user interface displays a list of available rendering devices in the home network in response to selection of the renderer selection control/indication and further wherein the first invocation and the second invocation select the single functional element in different ways.

13. The method of claim **1** further comprising the step of:

replacing the media transfer indication with an error indication in response to an error preventing the first target rendering device from rendering the first media content after selection of the media transfer control wherein the error indication indicates that the first target rendering device cannot render the first media content.

14. The method of claim **1** further comprising the step of:

replacing the renderer selection control/indication with error information in response to an error preventing the first target rendering device from rendering the first media content after selection of the media transfer control wherein the error information describes the error.

15. The method of claim **1** further comprising the step of:

replacing the media transfer control with an error correction control wherein selection of the error correction control by user input in the user interface of the mobile device enables correction of an error preventing the first target rendering device from rendering the first media content.

16. The method of claim **1** further comprising the step of:

selecting the media transfer control on the mobile device after initiating rendering of the first media content on the first target rendering device wherein selecting the media transfer control after initiating rendering of the first media content on the first target rendering device discontinues rendering of the first media content on the first target rendering device.

17. A method for transferring media content from a mobile device to a home network wherein the mobile device has a user interface and further wherein the home network has rendering devices, the method comprising the steps of:

displaying a media transfer control and a renderer selection control/indication concurrently in the user interface of the mobile device during execution of a media application by the mobile device wherein the renderer selection control/indication visually indicates a first target rendering device;

identifying the media content using the media application;

accepting first user input in the user interface of the mobile device wherein the first user input selects the renderer selection control/indication;

displaying a list of available rendering devices in the home network wherein the user interface of the mobile device displays the list in response to selection of the renderer selection control/indication;

accepting second user input in the user interface of the mobile device wherein the second user input selects a second target rendering device from the list of available rendering devices; and

rendering the media content on the second target rendering device.

18. The method of claim **17** further comprising the step of:

indicating the rendering devices in the home network which have media capabilities which correspond to the media content wherein the list of available rendering devices indicates the rendering devices in the home network which have the media capabilities which correspond to the media content.

19. The method of claim **17** further comprising the step of:

indicating the rendering devices in the home network which have media capabilities which do not correspond to the media content wherein the list of available rendering devices indicates the rendering devices in the home network which do not have the media capabilities which correspond to the media content.

20. The method of claim **17** further comprising the step of:

automatically identifying the first target rendering device from the rendering devices in the home network before the renderer selection control/indication visually indicates the first target rendering device wherein the mobile device identifies the first target rendering device without selection of the first target rendering device by the user.

21. The method of claim **17** wherein the media transfer control and the renderer selection control/indication are a single functional element provided by the user interface of the mobile device and further wherein the single functional element provides the media transfer control and the renderer selection control/indication.

22. The method of claim **17** further comprising the step of:

providing renderer setting controls with the list of available rendering devices wherein the user interface of the mobile device displays the renderer setting controls in response to selection of the renderer selection control/indication and further wherein the renderer setting controls enable a user of the mobile device to establish settings associated with each of the available rendering devices wherein a user of the mobile device establishes the settings for the second target rendering device before the second user input and further wherein the second target rendering device implements the settings during rendering of the media content.

23. The method of claim **17** further comprising the step of:

changing the renderer selection control/indication from a first icon to a second icon in response to selection of the second rendering device wherein the second icon visually indicates the second target rendering device.

24. The method of claim **17** further comprising the step of:

accepting third user input in the user interface of the mobile device wherein the third user input selects the media transfer control and further wherein the rendering of the media content on the second target rendering device is initiated in response to selection of the media transfer control.

25. A system for transferring media content to rendering devices in a home network using a mobile device, the system comprising:

a media application executing on the mobile device wherein the media application enables a user to identify selected media content;

a media transfer control which enables the user to identify a selected mode of operation from a first mode of operation and a second mode of operation wherein the first mode of operation transfers the selected media content to one or more of the rendering devices in the home network and further wherein the second mode of operation does not transfer the selected media content to any of the rendering devices in the home network;

a media transfer indication which visually indicates the selected mode of operation; and

a renderer selection control/indication which visually indicates a target rendering device from the rendering devices in the home network and which enables the user to change the target rendering device wherein the first mode of operation transfers the selected media content to the target rendering device.

26. The system of claim **25** further comprising:

a user interface of the mobile device wherein the media transfer control, the media transfer indication, and the renderer selection control/indication are concurrently displayed in the user interface during execution of the media application.

27. The system of claim **25** further comprising:

a plurality of media applications executable on the mobile device wherein each of the plurality of media applications enables the user to identify the selected media content and further wherein each of the plurality of media applications provides the media transfer control, the media transfer indication and the renderer selection control/indication.

28. The system of claim **25** wherein the media transfer control and the media transfer indication are a single functional element provided by the mobile device and further wherein the single functional element provides the media transfer control and the media transfer indication.

29. The system of claim **25** wherein the media transfer indication and the renderer selection control/indication are a single functional element provided by the mobile device and further wherein the single functional element provides the media transfer indication and the renderer selection control/indication.

30. The system of claim **25** wherein the media transfer control, the media transfer indication and the renderer selection control/indication are a single functional element provided by the mobile device and further wherein the single functional element provides the media transfer control, the media transfer indication and the renderer selection control/indication.

31. The system of claim **25** wherein the mobile device automatically identifies the target rendering device from the rendering devices in the home network in response to identification of the selected media content by the user and further wherein the mobile device identifies the target rendering device without selection of the target rendering device by the user after the identification of the selected media content wherein the target rendering device has media capabilities which correspond to the selected media content.

32. The system of claim **25** wherein a first rendering device and a second rendering device of the rendering devices in the home network are capable of rendering the selected media content and further wherein the renderer selection control/indication identifies the first rendering device as the target rendering device to the user of the mobile device wherein the mobile device detects unavailability of the first rendering device after identifying the first rendering device as the target rendering device and further wherein the renderer selection control/indication identifies the second rendering device as the target rendering device to the user in response to detection of the unavailability of the first target rendering device.

33. The system of claim **25** further comprising:

a list of the rendering devices in the home network wherein the list is displayed in response to user input which selects the renderer selection/control indication and further wherein the user changes the target rendering device using the list.

34. The system of claim **25** further comprising:

an error indication visually indicated by one of the media transfer indication and the renderer selection control/indication wherein the media transfer control provides at least one option to correct an error indicated by the error indication.

* * * * *

US008050652B2

(12) **United States Patent**
Qureshey et al.

(10) **Patent No.: US 8,050,652 B2**
(45) **Date of Patent: *Nov. 1, 2011**

(54) **METHOD AND DEVICE FOR AN INTERNET RADIO CAPABLE OF OBTAINING PLAYLIST CONTENT FROM A CONTENT SERVER**

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(73) Assignee: **Horsham Enterprises, LLC**, Wilmington, DE (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1374 days.

This patent is subject to a terminal disclaimer.

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(22) Filed: **Nov. 27, 2006**

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(51) **Int. Cl.**

H05K 11/00	(2006.01)
G06F 15/16	(2006.01)
H04N 5/445	(2011.01)

(52) **U.S. Cl.** **455/344**; 455/556.1; 455/557; 455/414.1; 455/414.3; 709/217; 709/219; 725/39; 725/45

(58) **Field of Classification Search** 455/3.02, 455/3.06, 142, 150.1, 151.1, 151.2, 154.1, 455/154.2, 158.1, 158.2, 158.4, 186.1, 344, 455/414.1, 414.3, 456.2, 556.1, 557; 709/217, 709/219; 725/39, 45, 18

See application file for complete search history.

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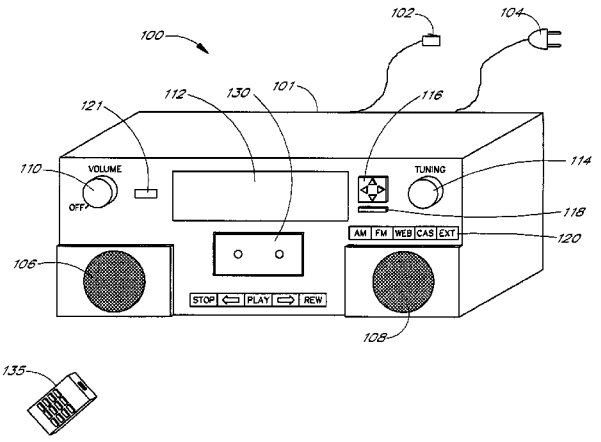
(57) **ABSTRACT**

A network-enabled audio device that provides a display device that allows the user to select playlists of music much like a jukebox is disclosed. The user can compose playlists from disk files, CD's, Internet streaming audio broadcasts, online music sites, and other audio sources. The user can also select a desired Web broadcast from a list of available Web broadcasts. In addition, the user can play standard audio CD's and MP3 encoded CD's and have access to local AM/FM stations. Further, the software, the user controls, and the display in the network-enabled audio device are operably configured and connected such that the user can listen to playlists that include CD's and other audio sources just as the user would choose a playlist in a jukebox. The user accesses a server site via a PC and the Internet. From the server site, the user obtains a list of the devices in his or her Internet Personal Audio Network (IPAN) and what songs are on those devices. The IPAN includes an IPAN server, an IPAN client, and IPAN software stored on the network-enabled audio device. Thus, the network-enabled audio device provides people who are or are not comfortable with computers a way of taking music from various sources and putting it into one place for listening pleasure. In one embodiment, the Personal Computer (PC) is used to compose the playlists, but the user is able to listen to playlists and other audio sources without using the PC.

64 Claims, 49 Drawing Sheets



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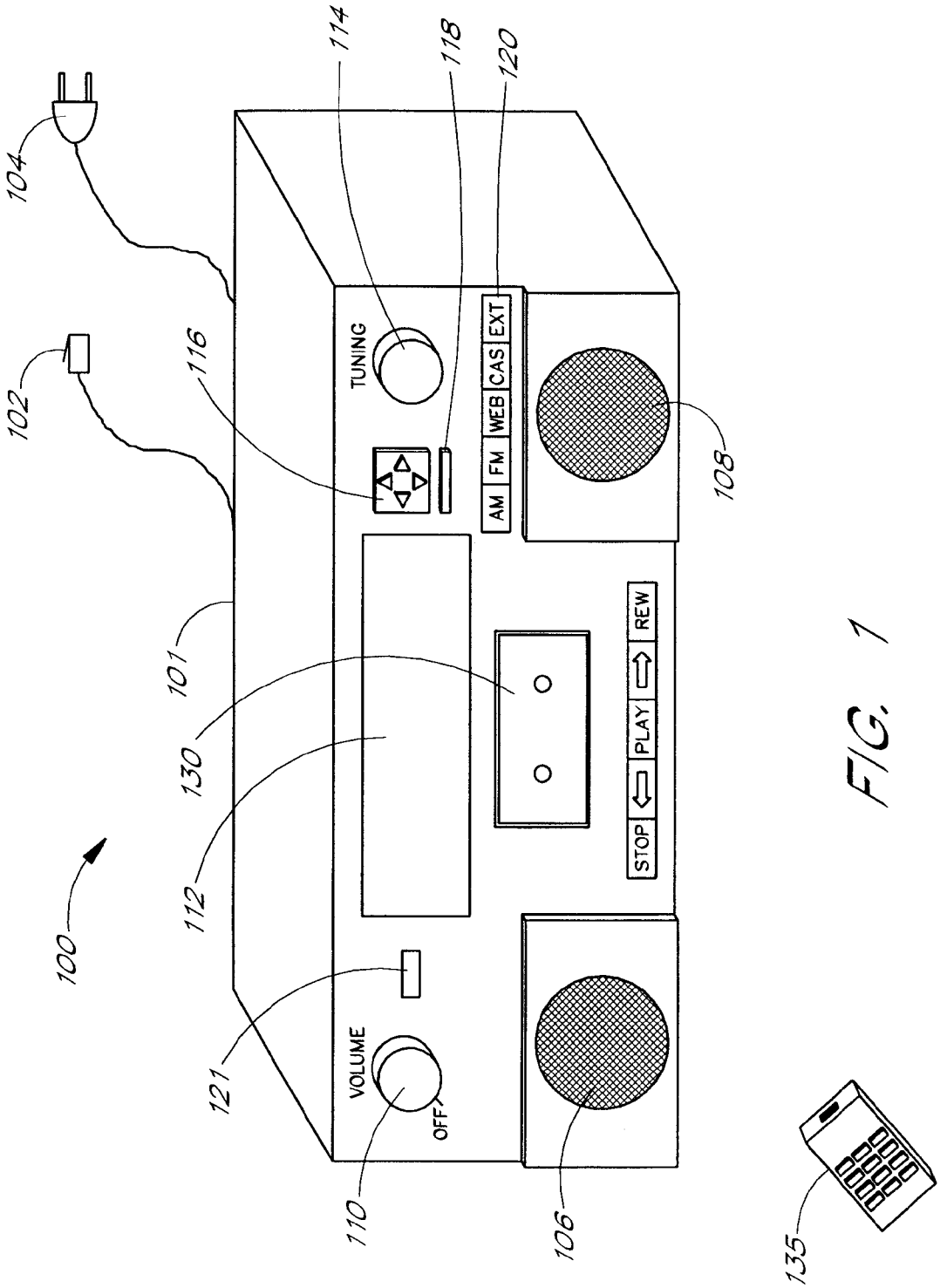
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STOP
PLAY
REW
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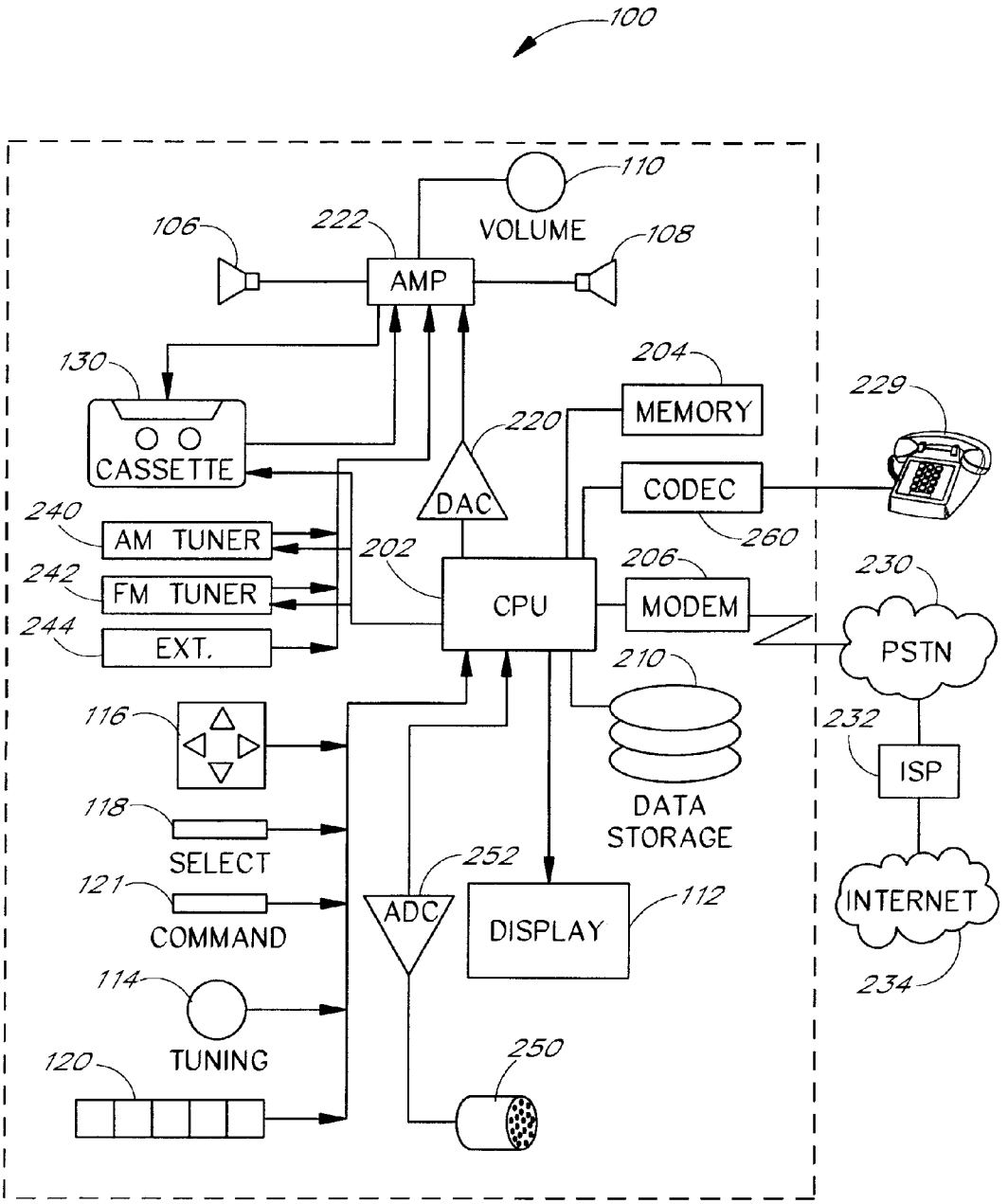
FIG. 1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202
206
230
242
FM TUNER
CPU
MODEM
244
EXT.
PSTN
210
116
232
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DISPLAY
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COMMAND
INTERNET
114
234
TUNING
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FIG. 2

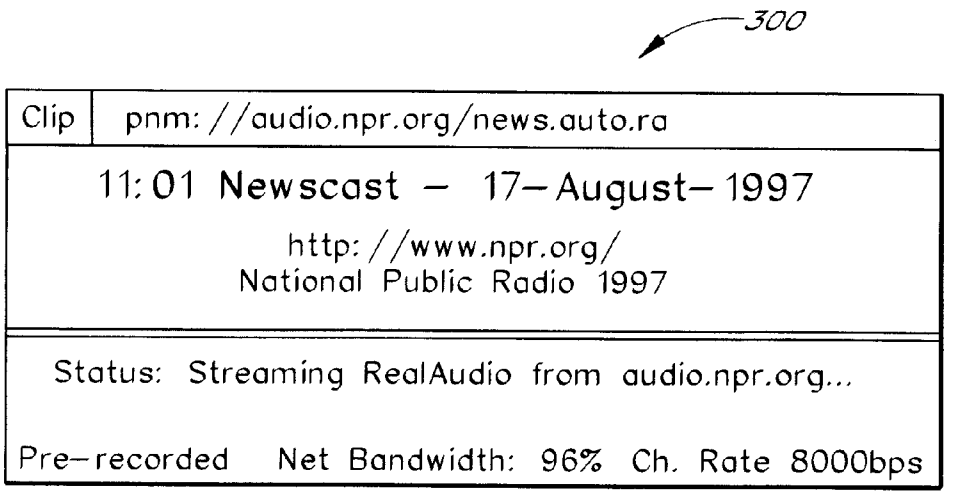


FIG. 3A

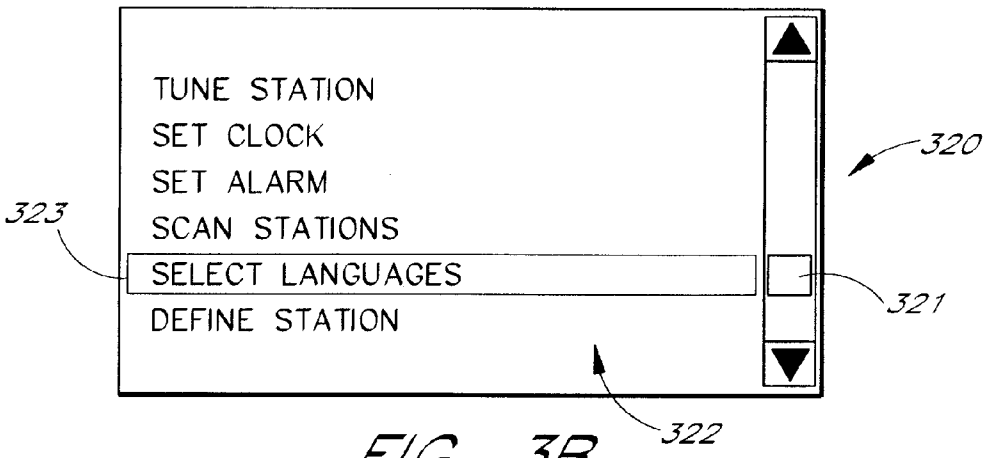


FIG. 3B

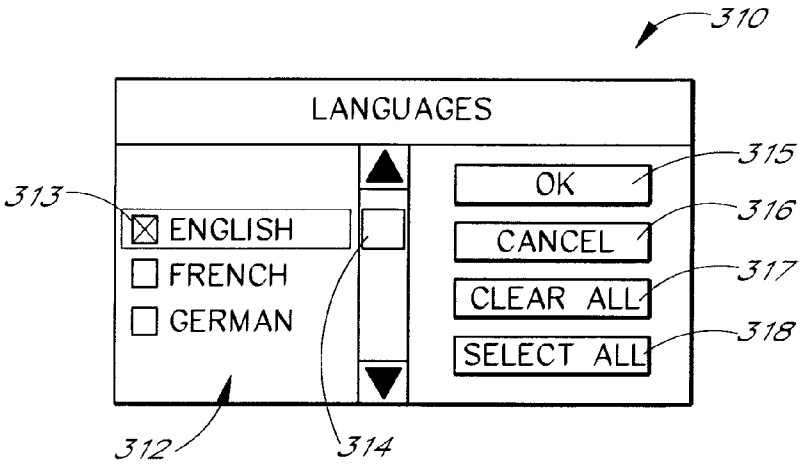


FIG. 3C

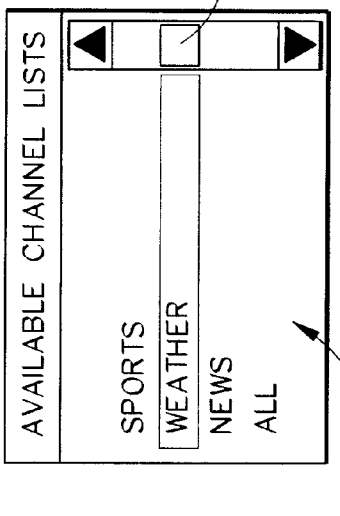

330
331
AVAILABLE CHANNEL LISTS
SPORTS
WEATHER
NEWS
ALL
332

FIG. 3D

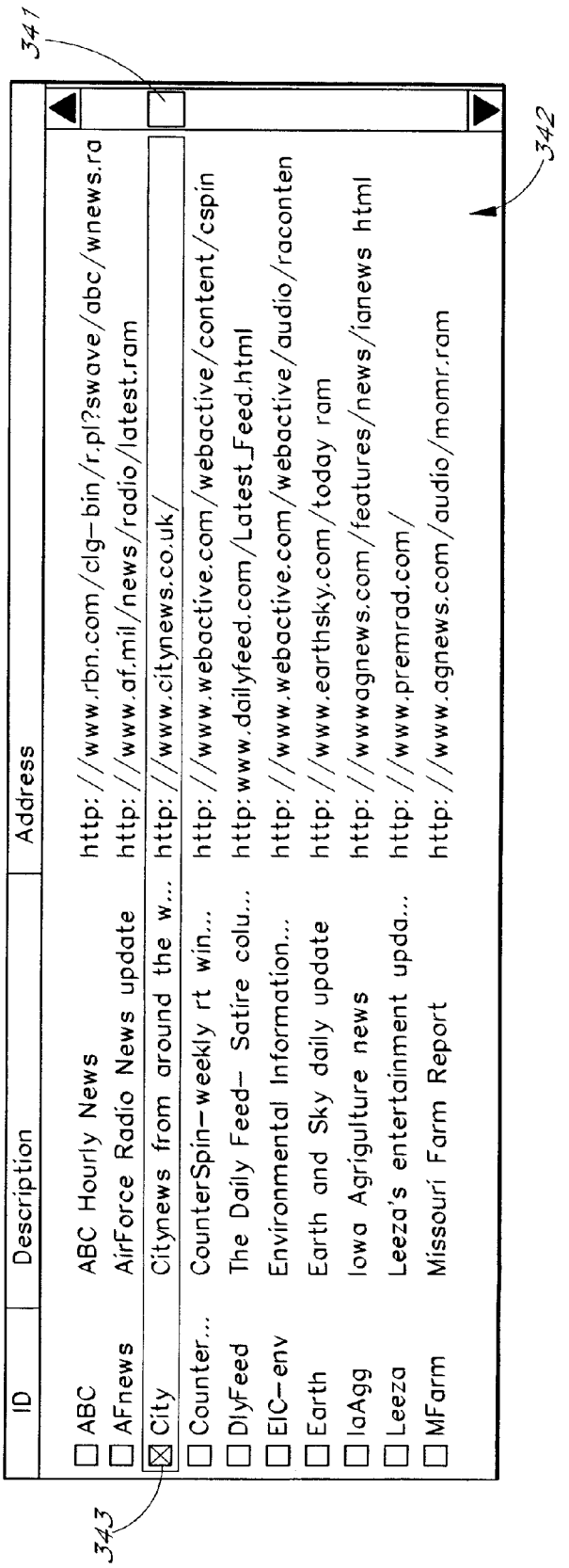

340
341
342
343
ID
Description
Address
ABC
ABC Hourly News
http://www.rbn.com/cgi-bin/r.pl?swave/abc/wnews.ra
AFnews
AirForce Radio News update
http://www.af.mil/news/radio/latest.ram
City
Citynews from around the w...
http://www.citynews.co.uk/
Counter...
CounterSpin-weekly rt win...
http://www.webactive.com/webactive/content/cspin
DlyFeed
The Daily Feed- Satire colu...
http:www.dailyfeed.com/Latest_Feed.html
EIC-env
Environmental Information...
http://www.webactive.com/webactive/audio/raconten
Earth
Earth and Sky daily update
http://www.earthsky.com/today ram
IaAgg
Iowa Agriculture news
http://wwwagnews.com/features/news/ianews html
Leeza
Leeza's entertainment upda...
http://www.premrad.com/
MFarm
Missouri Farm Report
http://www.agnews.com/audio/momr.ram

FIG. 3E

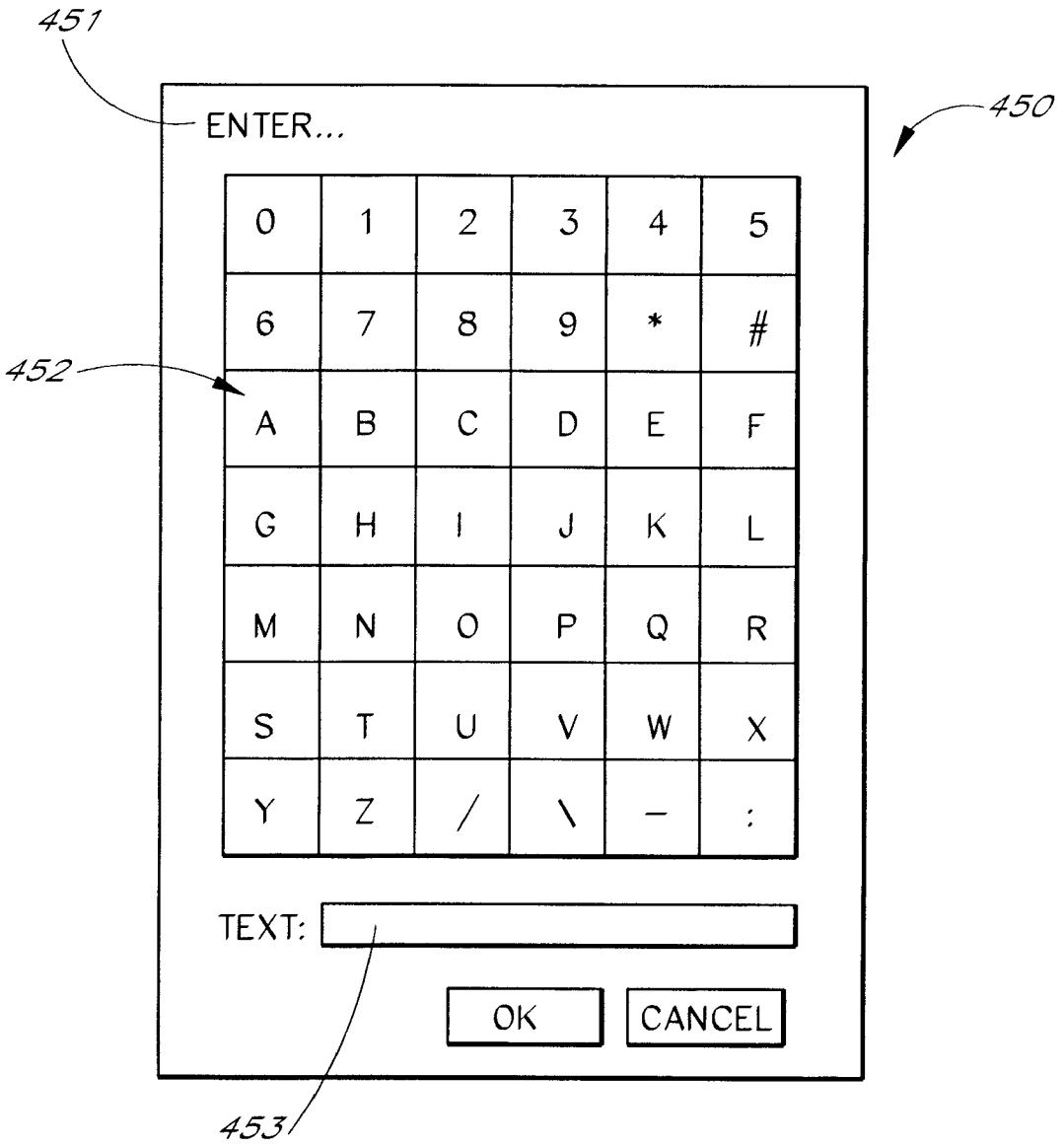

451
ENTER...
450
0 1 2 3 4 5
6 7 8 9 * #
452
A B C D E F
G H I J K L
M N O P Q R
S T U V W X
Y Z / \ - :
TEXT:
OK
CANCEL
453

FIG. 4

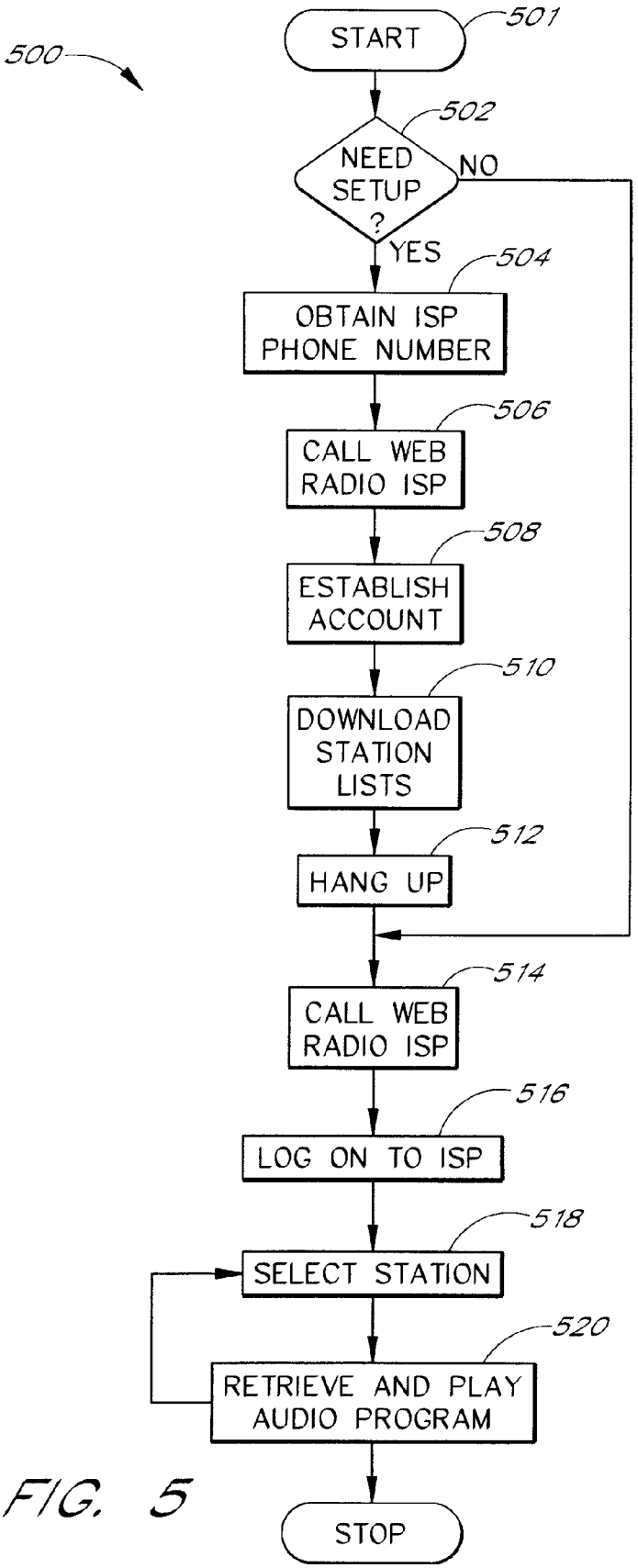

500
START
501
NEED SETUP ?
502
NO
YES
OBTAIN ISP PHONE NUMBER
504
CALL WEB RADIO ISP
506
ESTABLISH ACCOUNT
508
DOWNLOAD STATION LISTS
510
HANG UP
512
CALL WEB RADIO ISP
514
LOG ON TO ISP
516
SELECT STATION
518
RETRIEVE AND PLAY AUDIO PROGRAM
520
STOP

FIG. 5

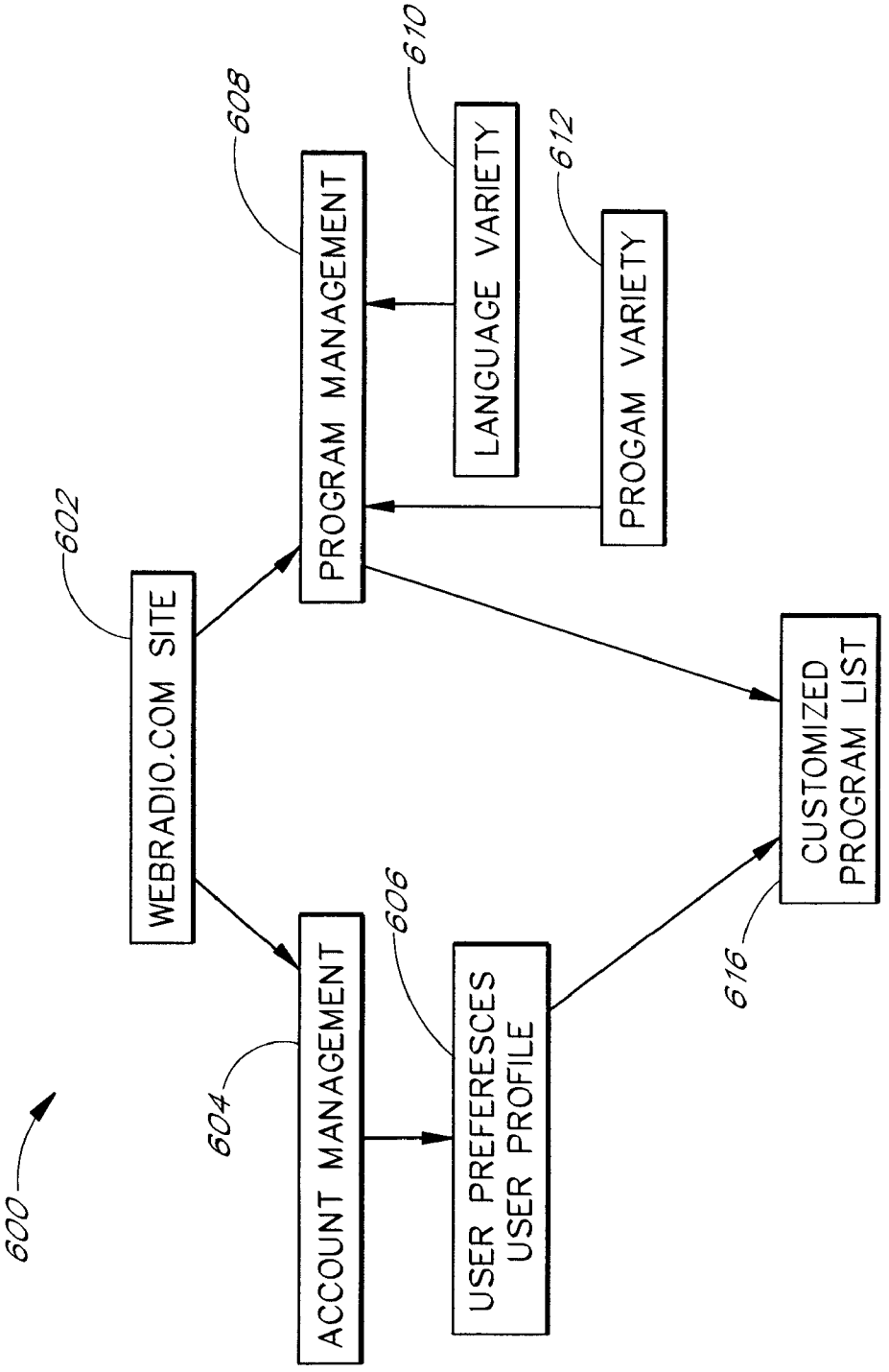

600
602
WEBRADIO.COM SITE
604
ACCOUNT MANAGEMENT
606
USER PREFERESCES
USER PROFILE
608
PROGRAM MANAGEMENT
610
LANGUAGE VARIETY
612
PROGAM VARIETY
616
CUSTOMIZED
PROGRAM LIST

FIG. 6

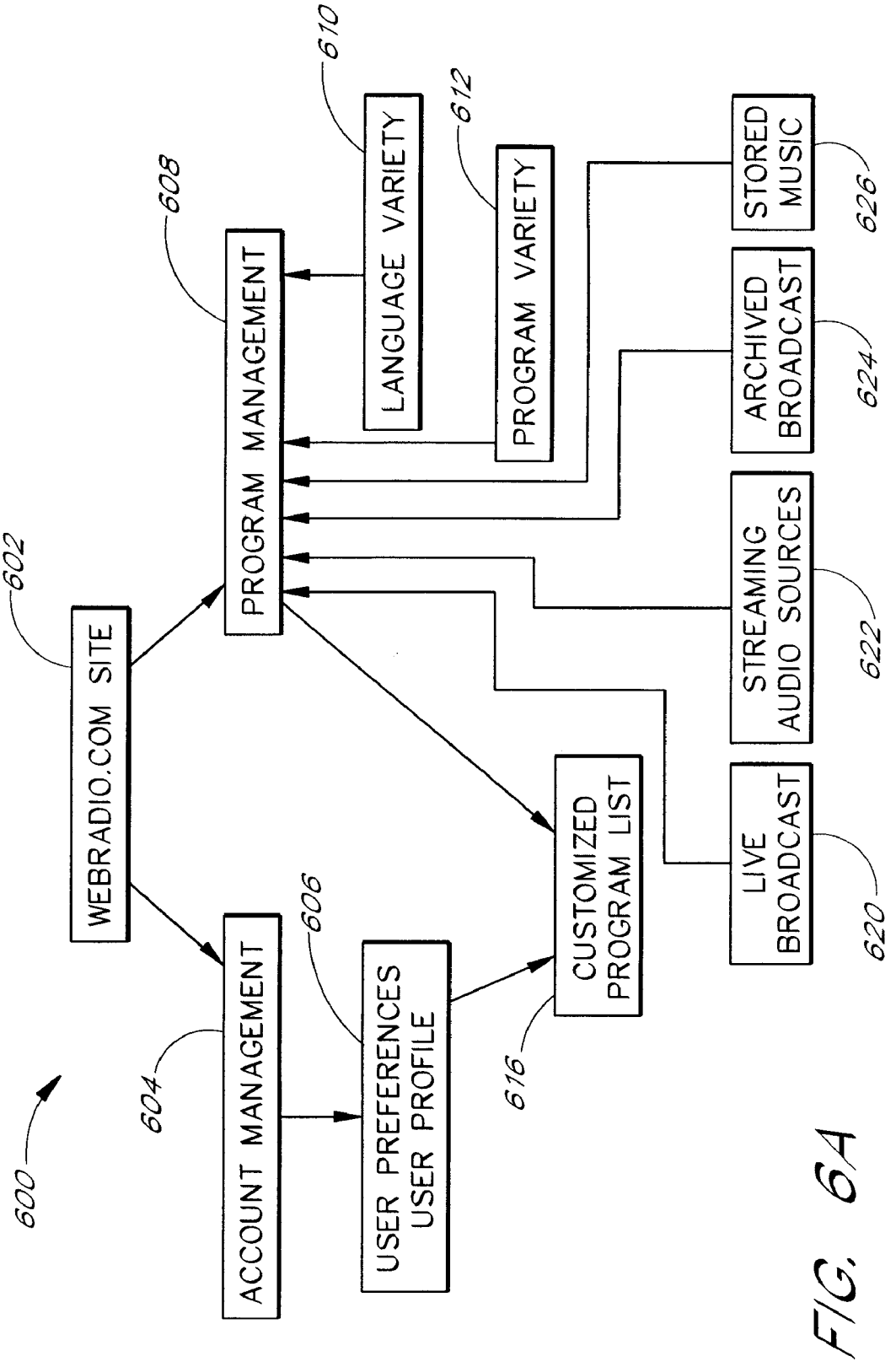

600
602
WEBRADIO.COM SITE
604
ACCOUNT MANAGEMENT
606
USER PREFERENCES
USER PROFILE
608
PROGRAM MANAGEMENT
610
LANGUAGE VARIETY
612
PROGRAM VARIETY
616
CUSTOMIZED
PROGRAM LIST
620
LIVE
BROADCAST
622
STREAMING
AUDIO SOURCES
624
ARCHIVED
BROADCAST
626
STORED
MUSIC

FIG. 6A

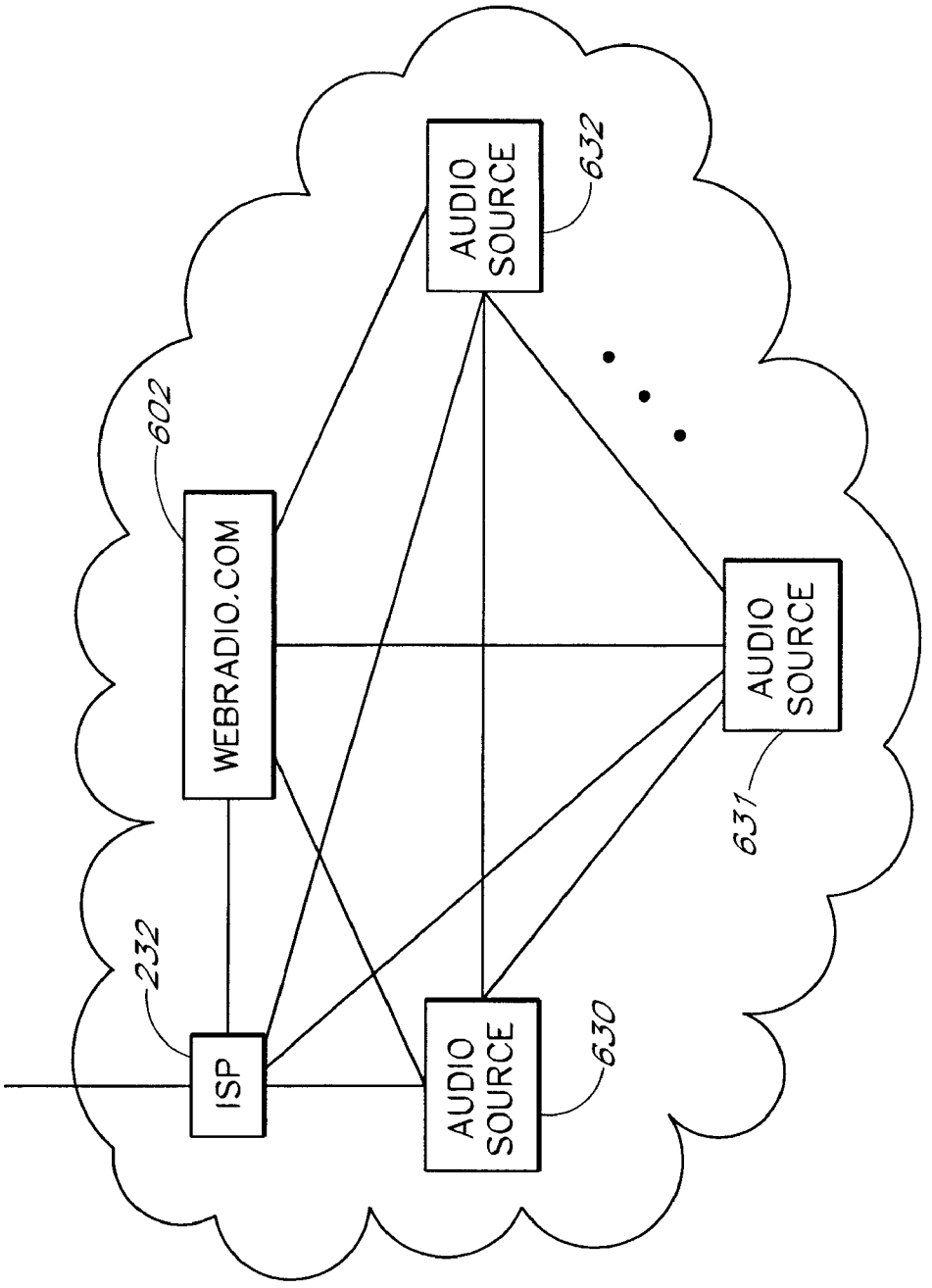

AUDIO SOURCE
632
602
WEBRADIO.COM
AUDIO SOURCE
631
232
ISP
AUDIO SOURCE
630

FIG. 6B

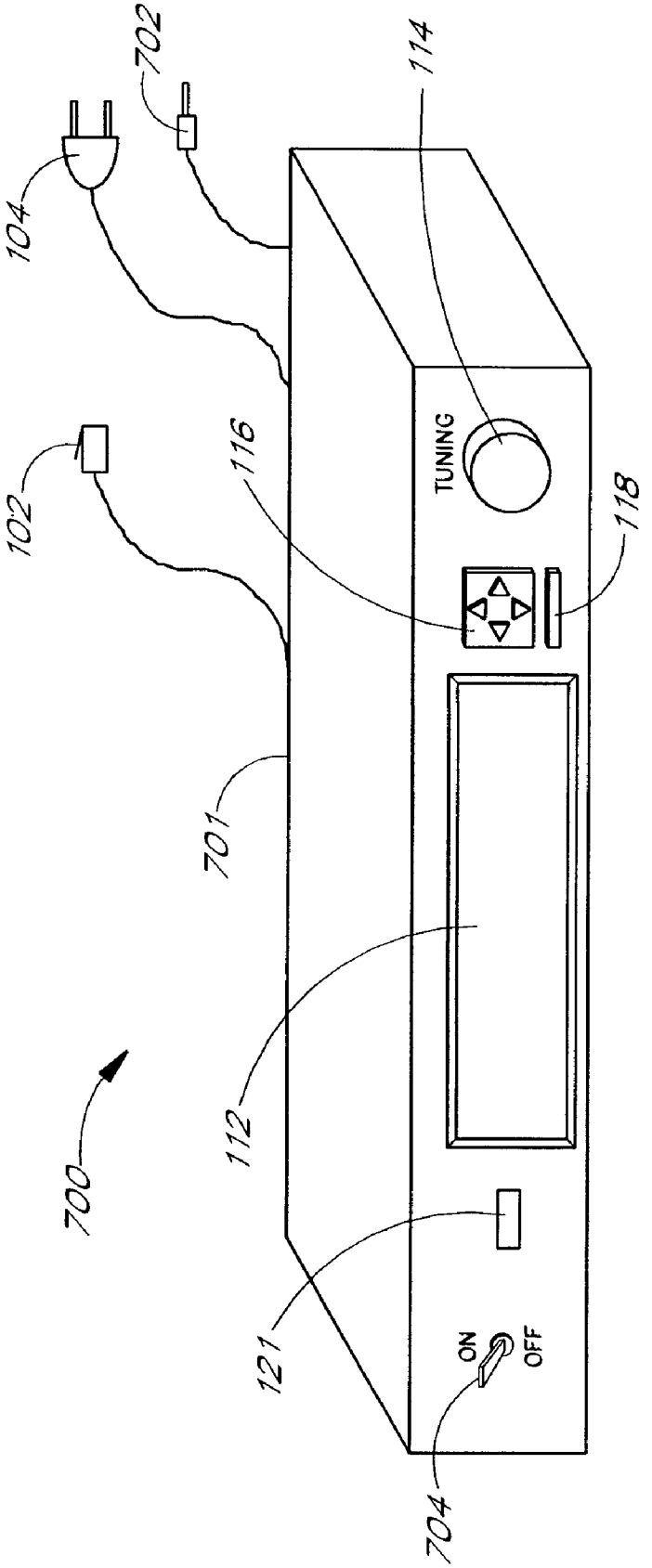


FIG. 7

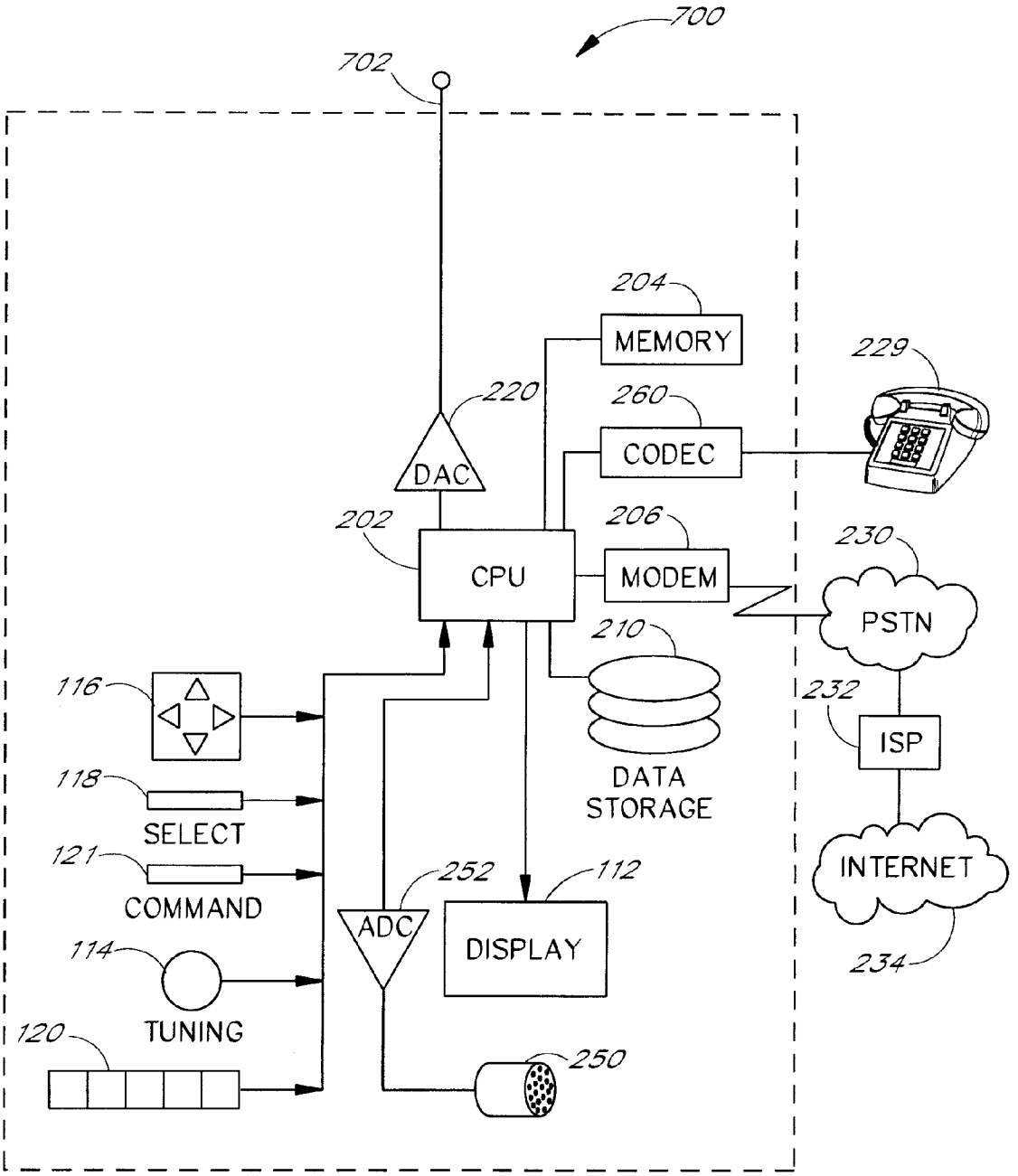

700
702
204
MEMORY
229
220
260
CODEC
DAC
202
206
230
CPU
MODEM
PSTN
210
116
232
ISP
118
SELECT
DATA
STORAGE
121
252
112
COMMAND
ADC
DISPLAY
INTERNET
114
TUNING
234
120
250

FIG. 8

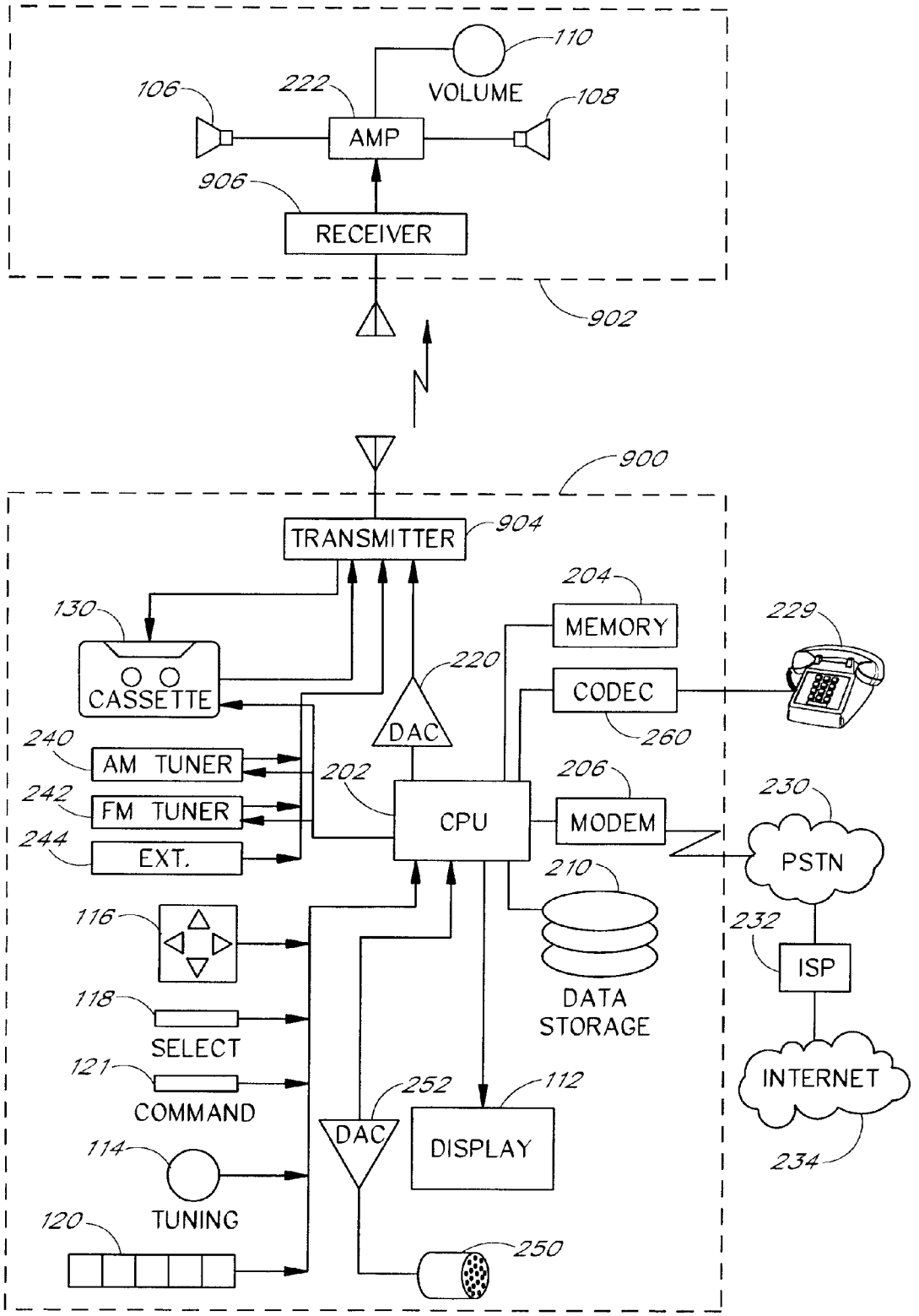

110
VOLUME
106
222
108
AMP
906
RECEIVER
902
900
TRANSMITTER
904
204
MEMORY
130
229
CASSETTE
220
CODEC
DAC
240
260
AM TUNER
202
206
242
FM TUNER
CPU
MODEM
230
244
EXT.
PSTN
210
116
232
ISP
118
DATA
STORAGE
SELECT
121
COMMAND
252
112
DAC
DISPLAY
INTERNET
114
TUNING
234
120
250

FIG. 9

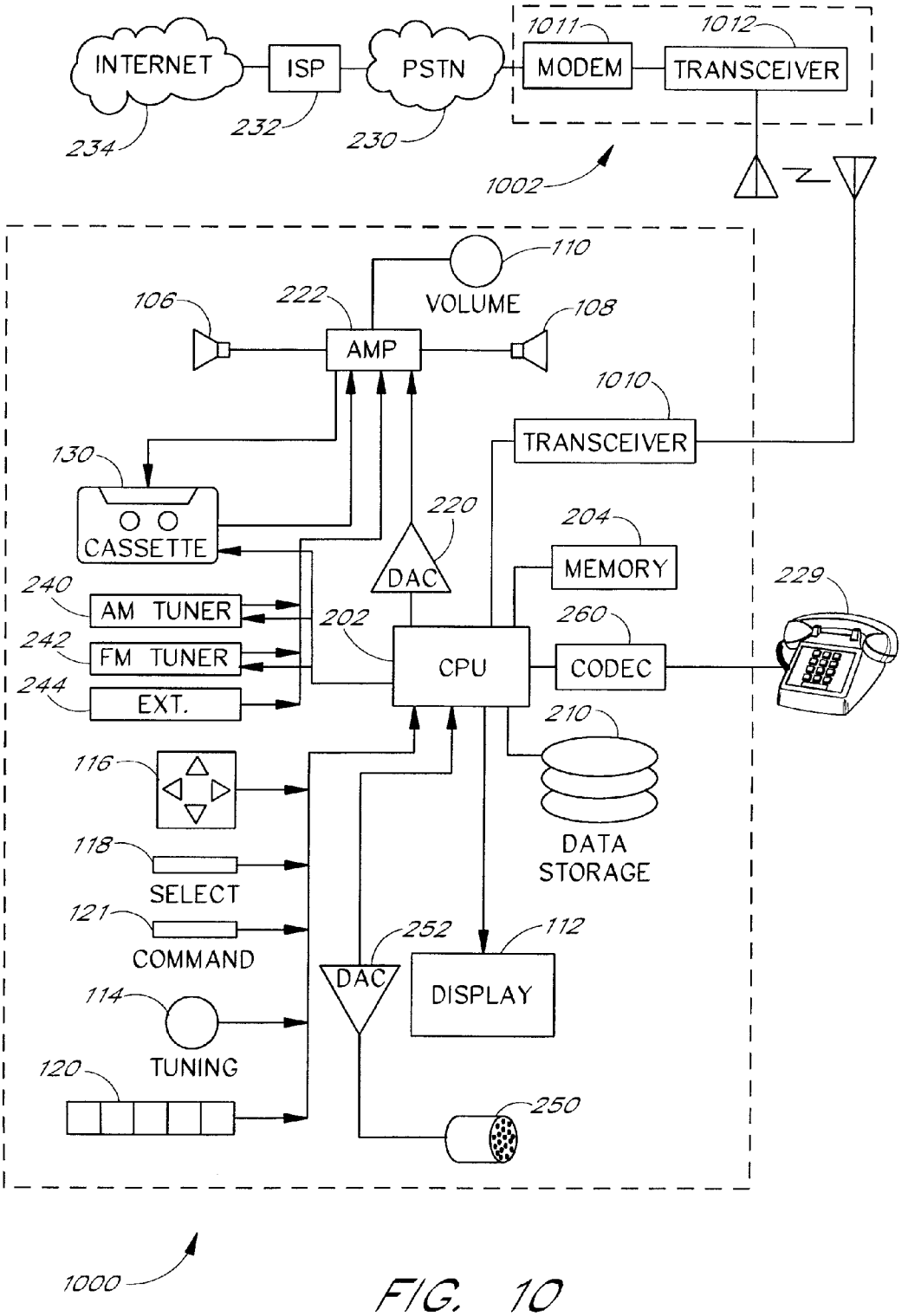

INTERNET
ISP
PSTN
MODEM
TRANSCEIVER
1011
1012
234
232
230
1002
110
VOLUME
106
222
AMP
108
1010
TRANSCEIVER
130
CASSETTE
220
DAC
204
MEMORY
229
240
AM TUNER
202
260
242
FM TUNER
CPU
CODEC
244
EXT.
210
116
DATA
STORAGE
118
SELECT
121
COMMAND
252
112
DAC
DISPLAY
114
TUNING
120
250
1000

FIG. 10

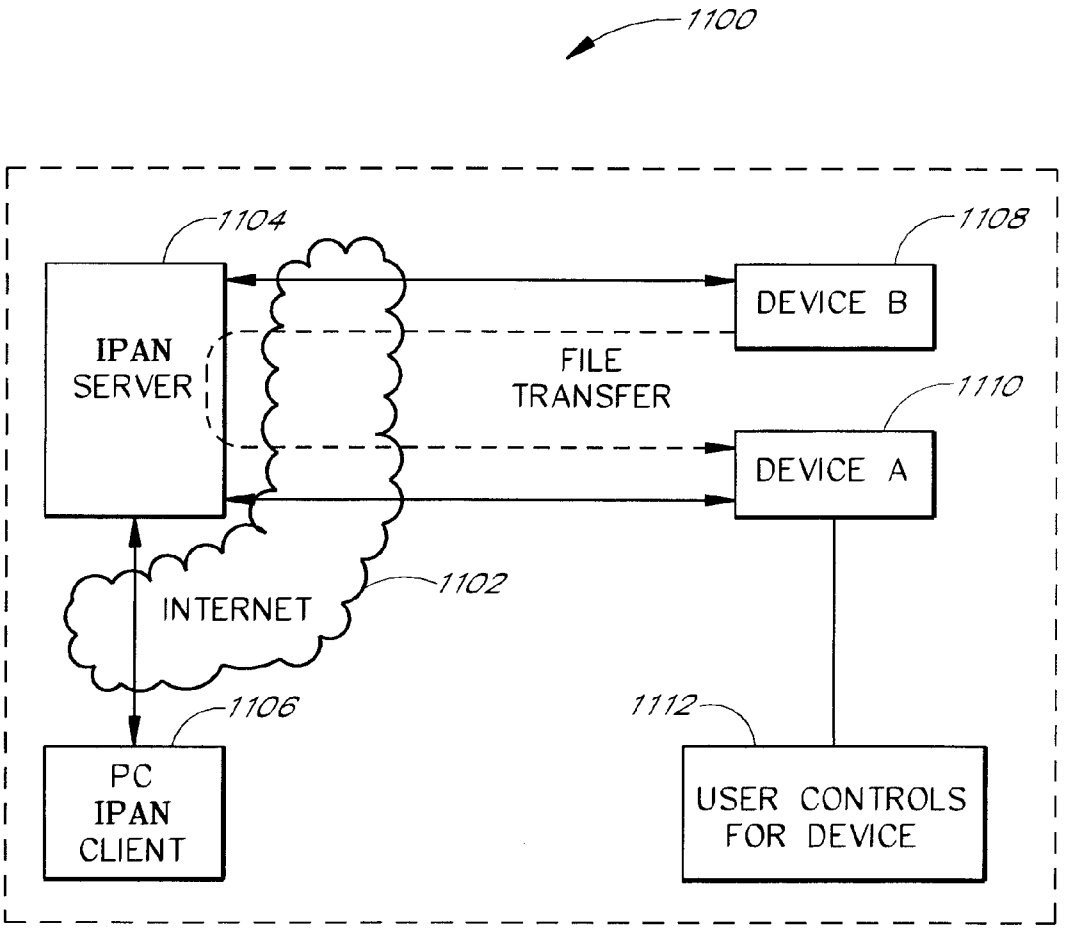

1100
1104
1108
IPAN SERVER
DEVICE B
FILE TRANSFER
1110
DEVICE A
INTERNET
1102
1106
1112
PC IPAN CLIENT
USER CONTROLS FOR DEVICE

FIG. 11

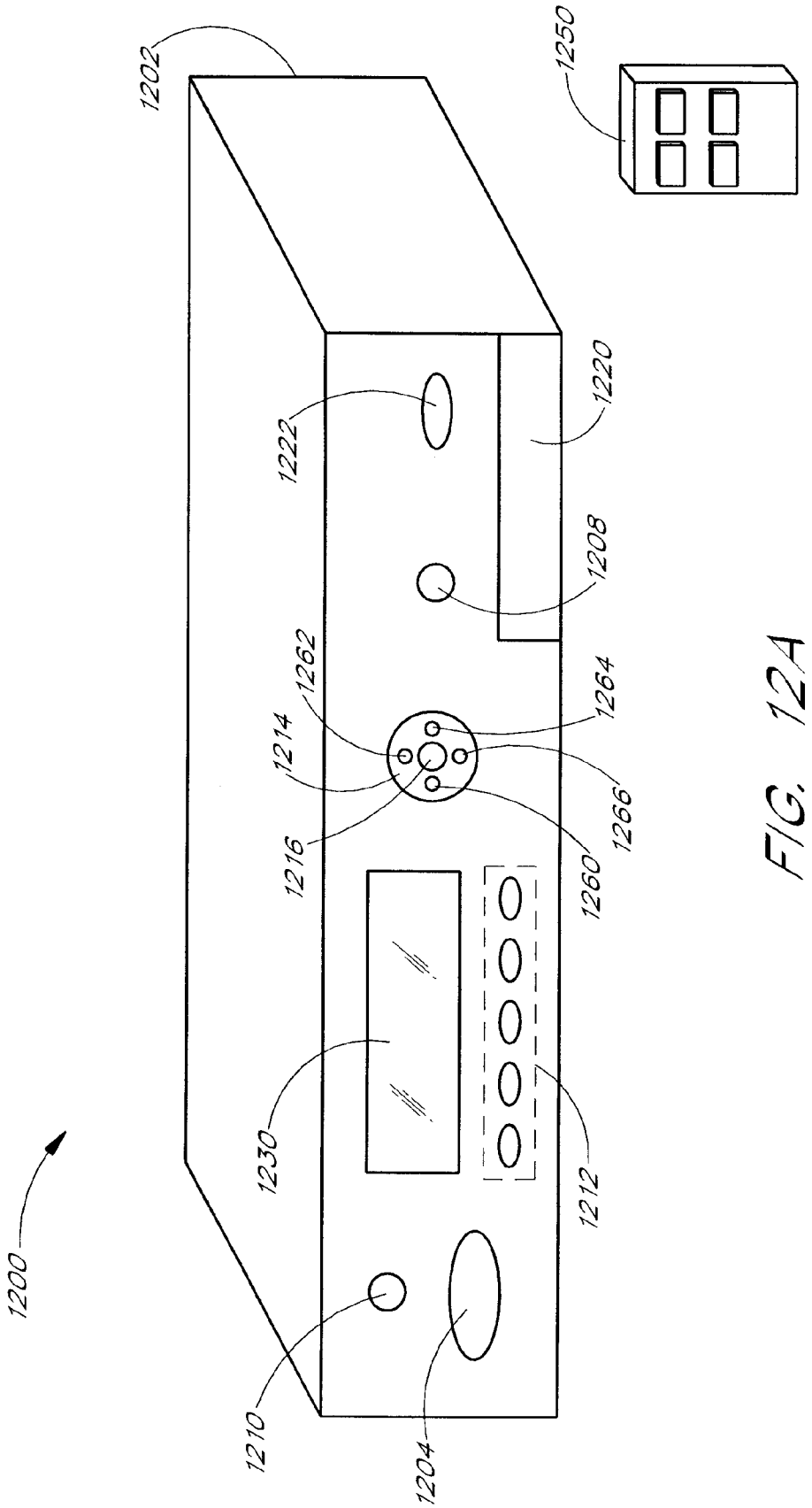

1202
1250
1220
1222
1208
1262
1264
1214
1266
1216
1260
1230
1212
1200
1210
1204

FIG. 12A

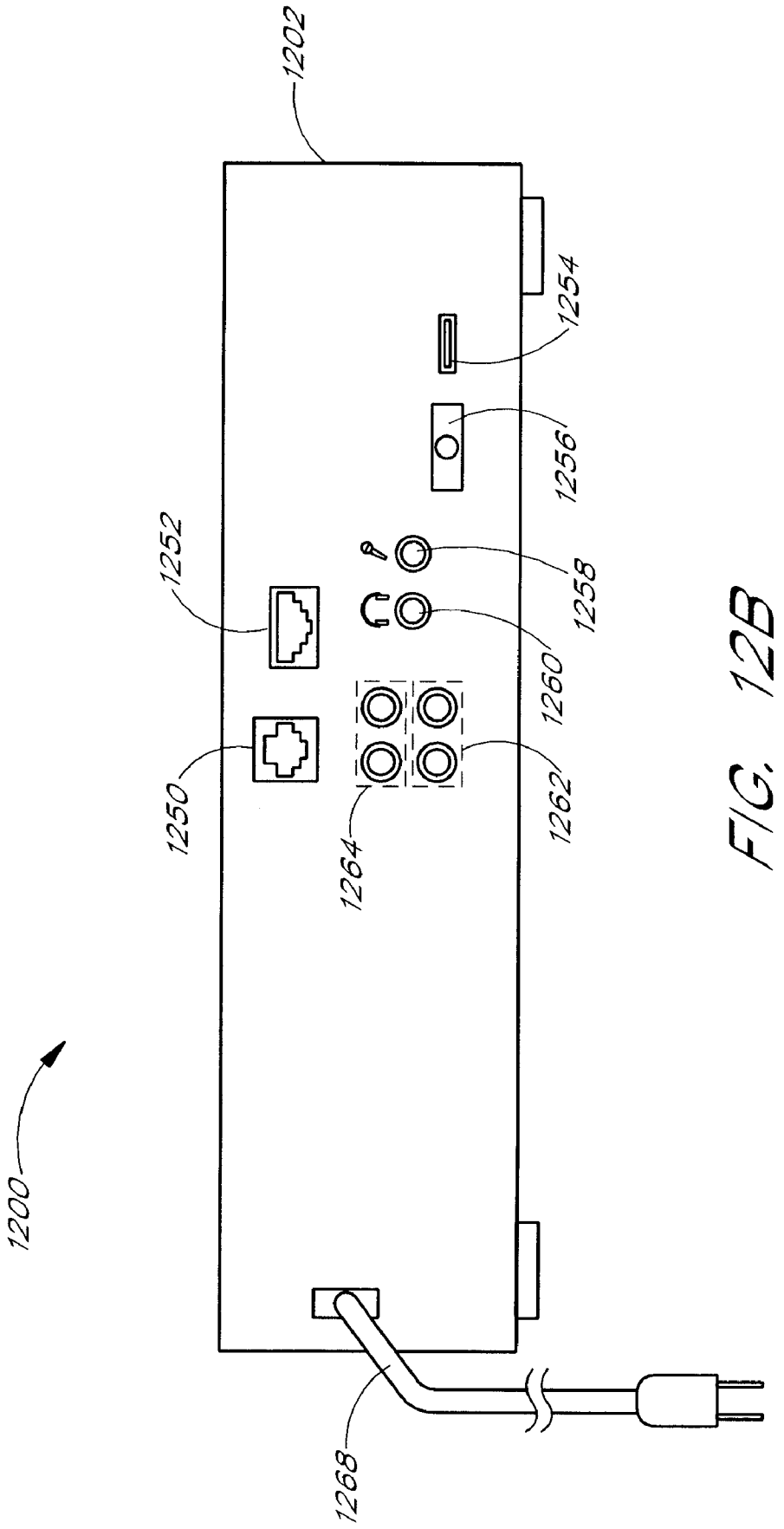


FIG. 12B

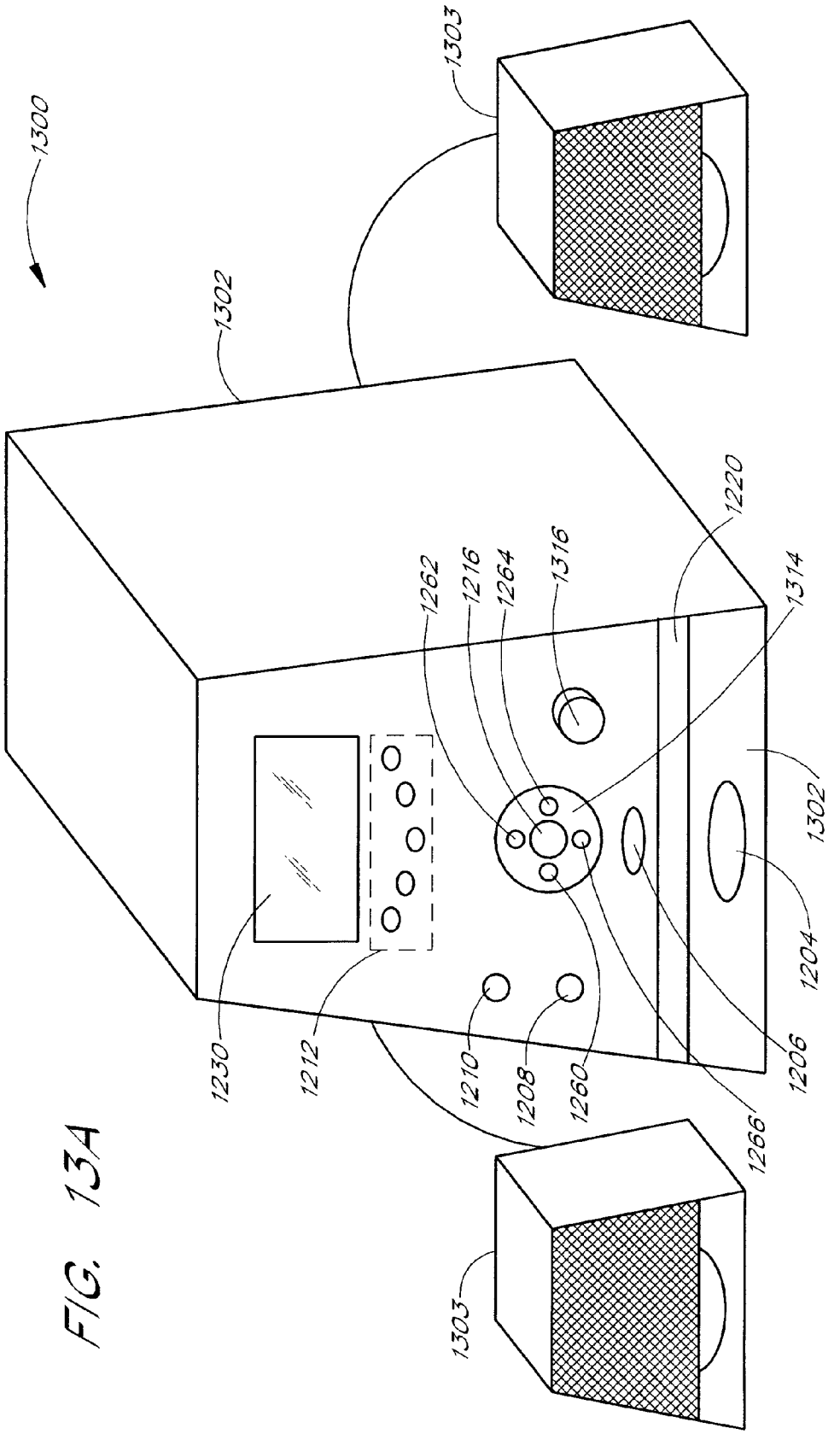

1300
1303
1302
1220
1262
1216
1264
1316
1314
1302
1204
1206
1230
1212
1210
1208
1260
1266
1303

FIG. 13A

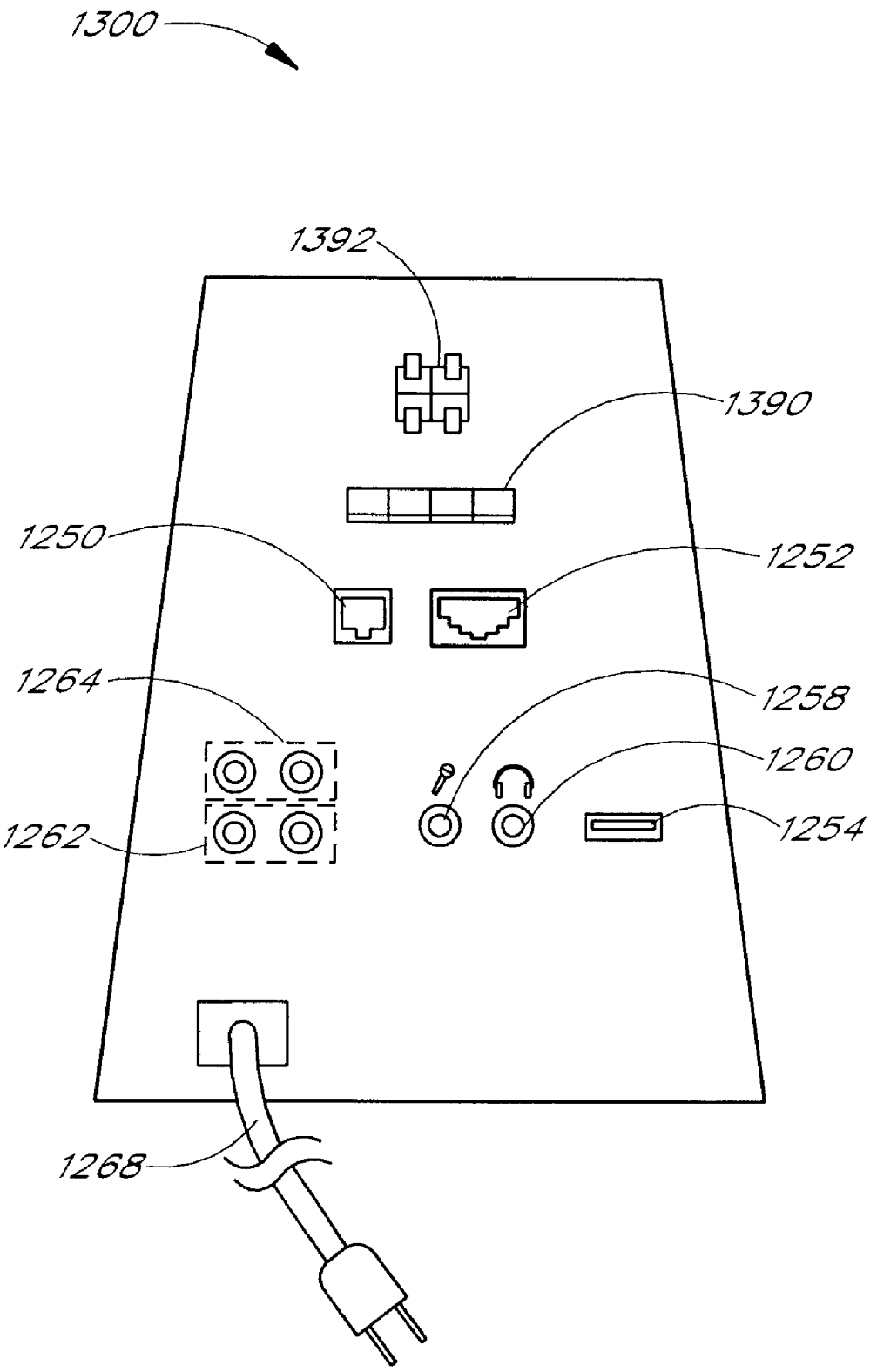


FIG. 13B

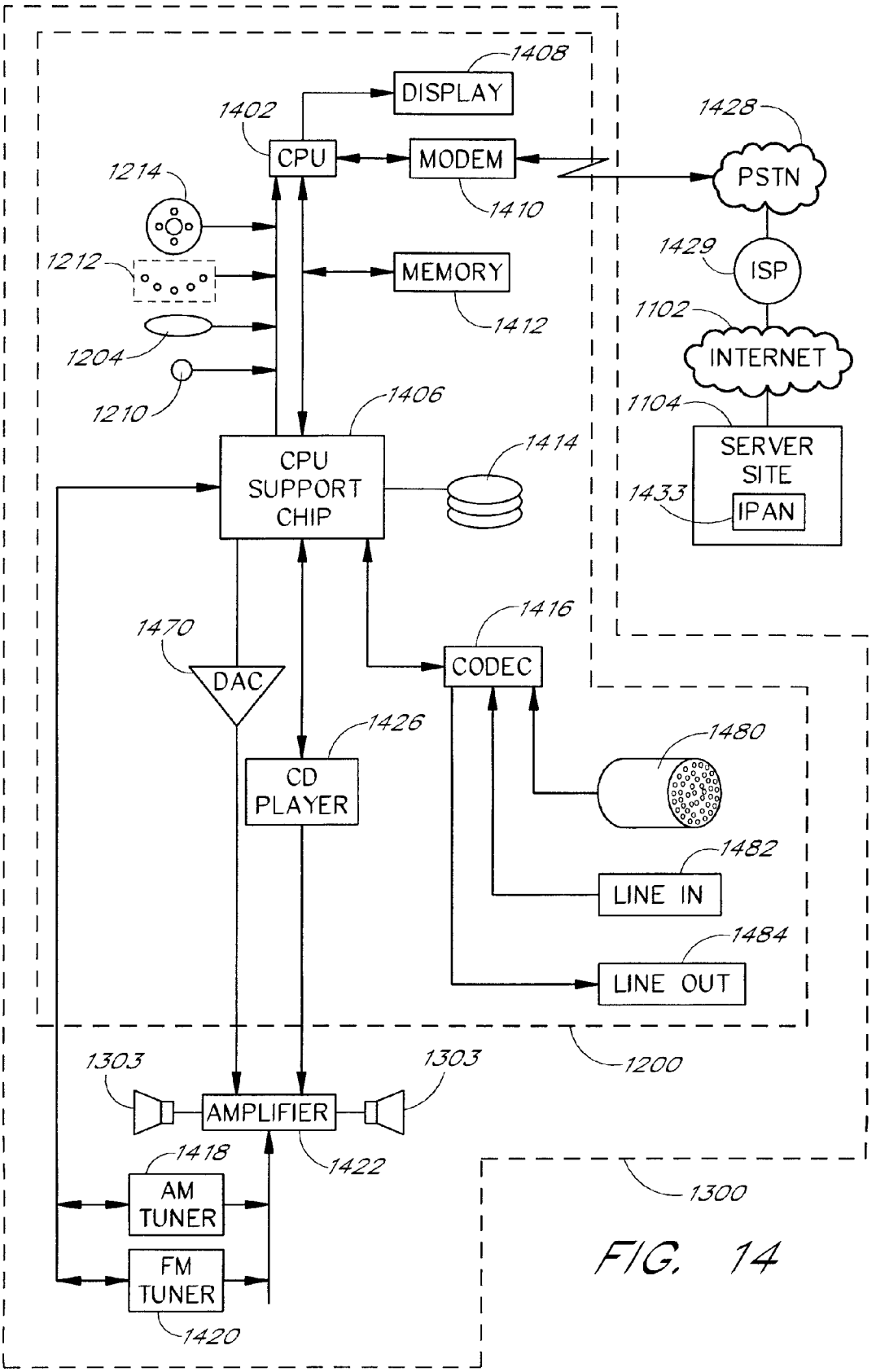

1408
DISPLAY
1402
CPU
MODEM
1428
PSTN
1214
1410
1212
MEMORY
1429
ISP
1412
1102
1204
INTERNET
1210
1406
1104
CPU SUPPORT CHIP
1414
SERVER SITE
1433
IPAN
1470
1416
DAC
CODEC
1426
1480
CD PLAYER
1482
LINE IN
1484
LINE OUT
1200
1303
1303
AMPLIFIER
1422
1418
1300
AM TUNER
FM TUNER
1420

FIG. 14

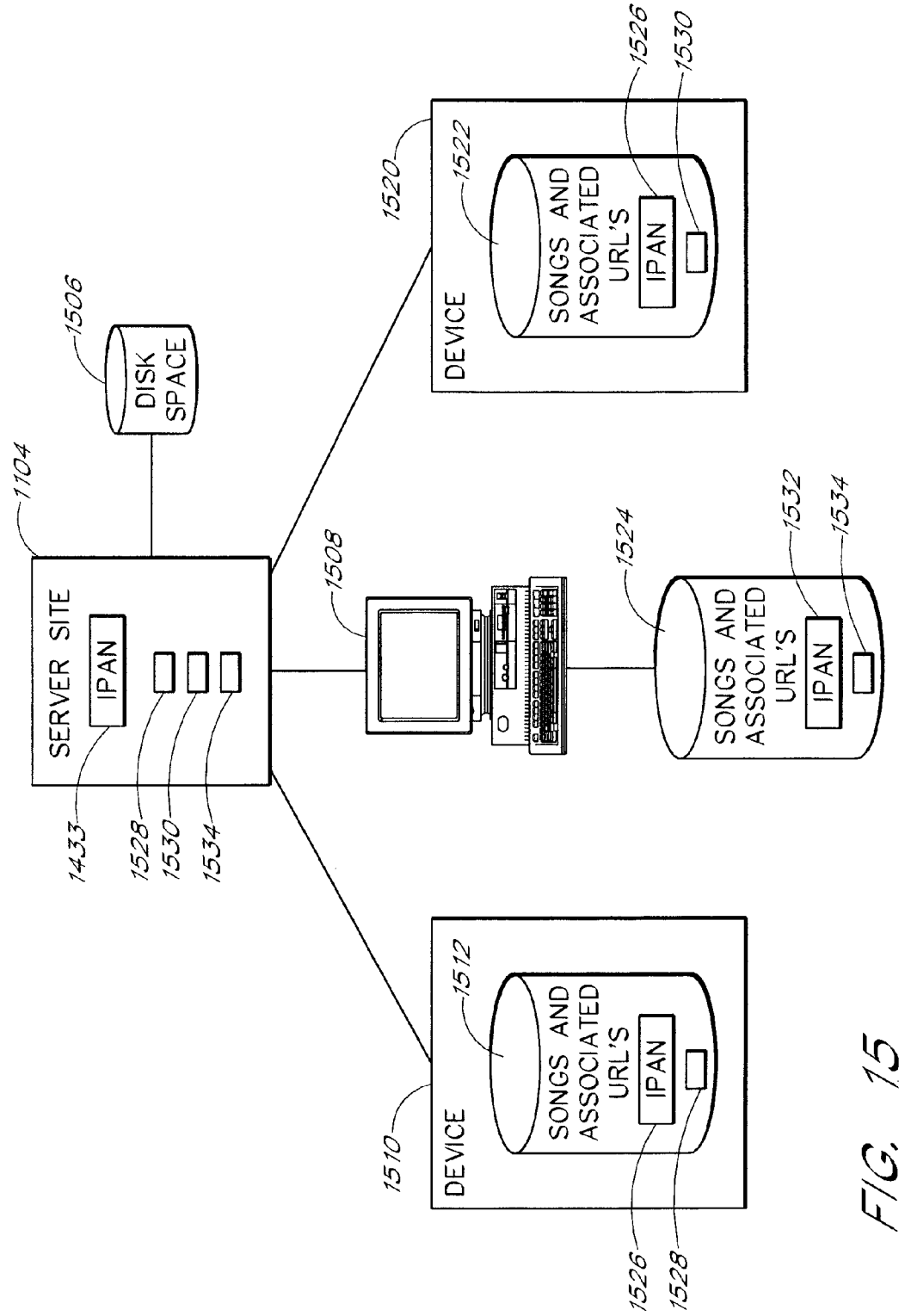

1506
DISK SPACE
1104
SERVER SITE
IPAN
1433
1528
1530
1534
1508
1520
1522
DEVICE
SONGS AND ASSOCIATED URL'S
IPAN
1526
1530
1524
1532
1534
SONGS AND ASSOCIATED URL'S
IPAN
1510
1512
DEVICE
SONGS AND ASSOCIATED URL'S
IPAN
1526
1528

FIG. 15

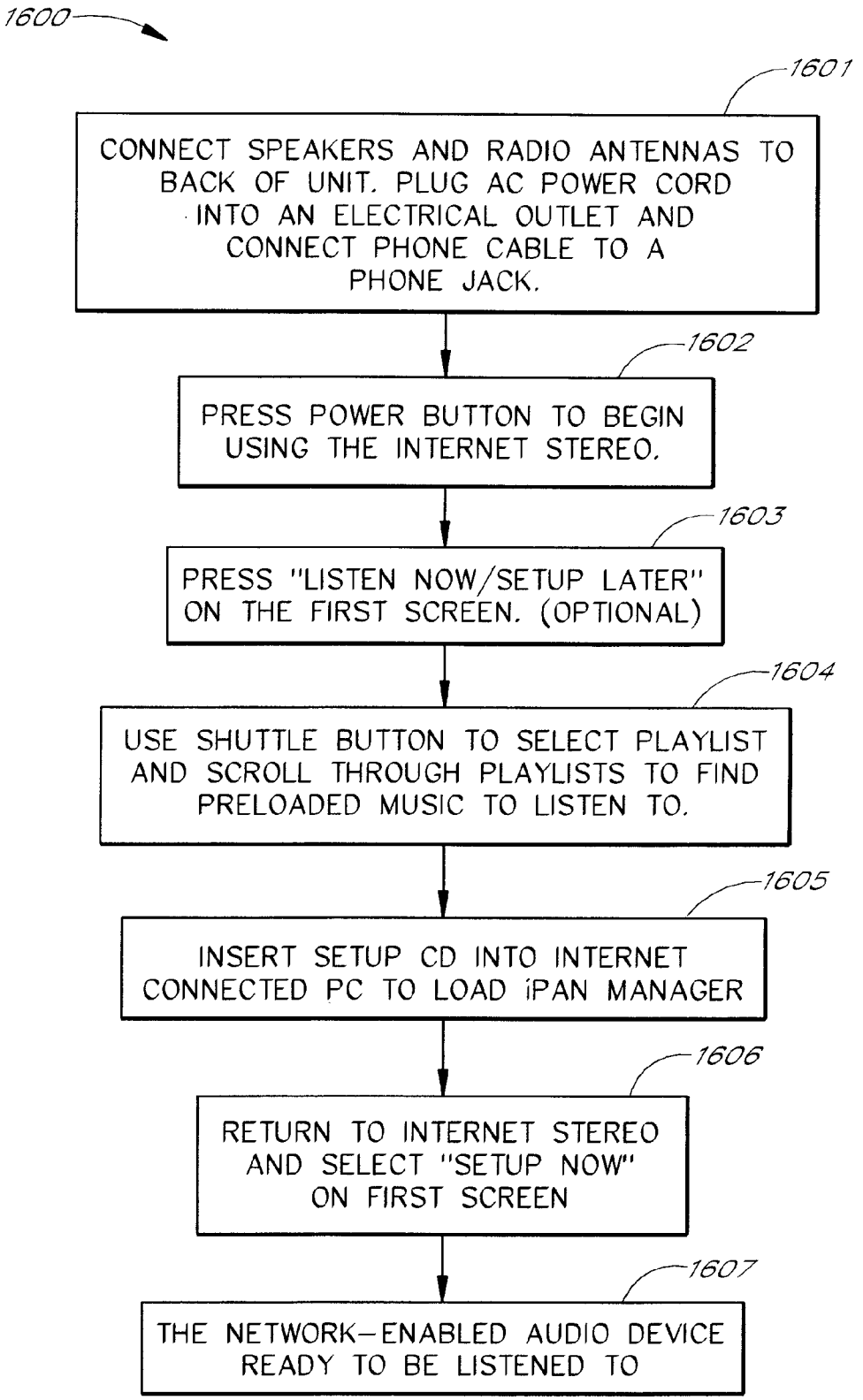

1600
1601
CONNECT SPEAKERS AND RADIO ANTENNAS TO BACK OF UNIT. PLUG AC POWER CORD INTO AN ELECTRICAL OUTLET AND CONNECT PHONE CABLE TO A PHONE JACK.
1602
PRESS POWER BUTTON TO BEGIN USING THE INTERNET STEREO.
1603
PRESS "LISTEN NOW/SETUP LATER" ON THE FIRST SCREEN. (OPTIONAL)
1604
USE SHUTTLE BUTTON TO SELECT PLAYLIST AND SCROLL THROUGH PLAYLISTS TO FIND PRELOADED MUSIC TO LISTEN TO.
1605
INSERT SETUP CD INTO INTERNET CONNECTED PC TO LOAD iPAN MANAGER
1606
RETURN TO INTERNET STEREO AND SELECT "SETUP NOW" ON FIRST SCREEN
1607
THE NETWORK-ENABLED AUDIO DEVICE READY TO BE LISTENED TO

FIG. 16

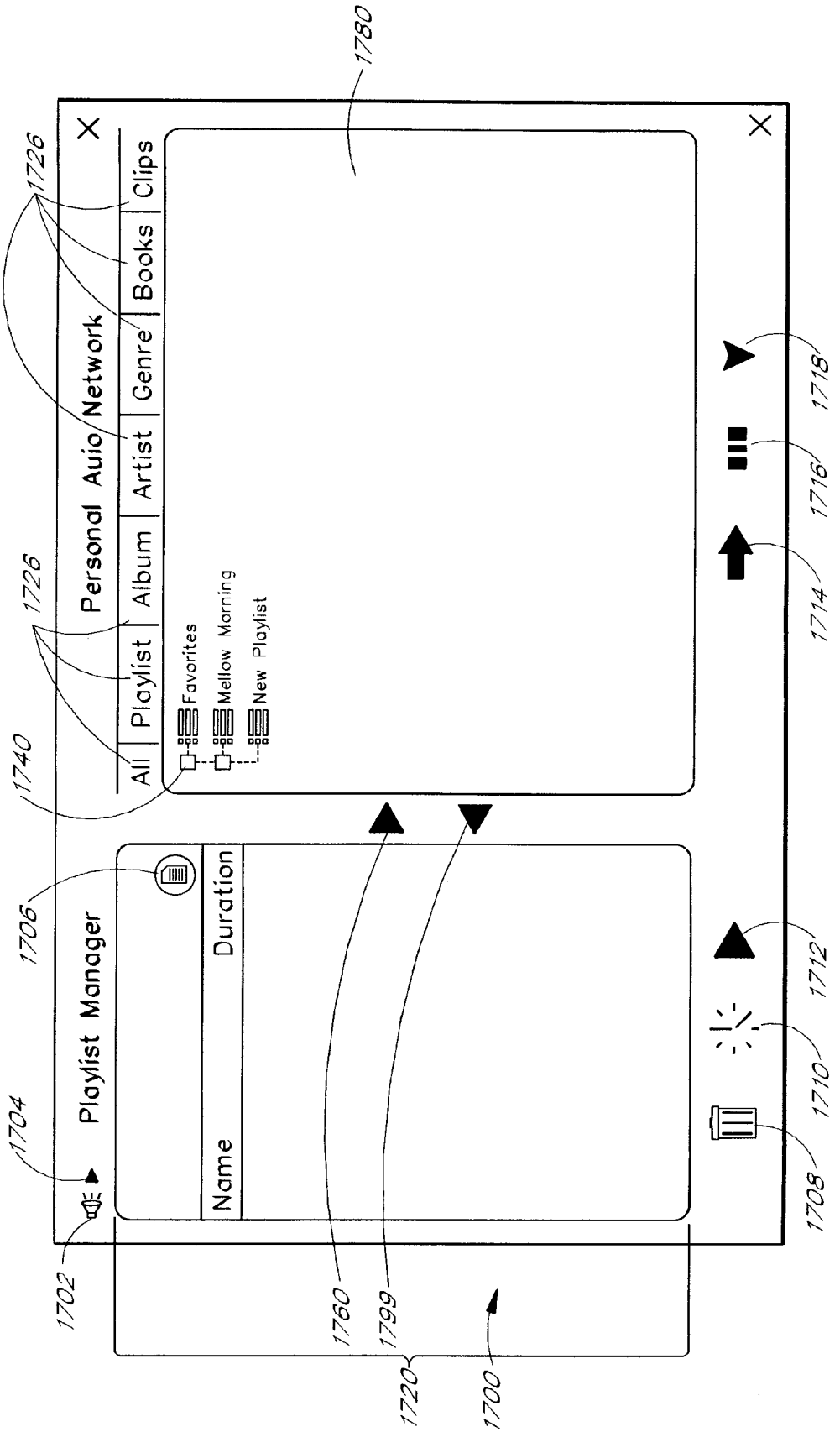

1780
1726
Clips
Books
Genre
Artist
Album
Playlist
All
Personal Auio Network
Favorites
Mellow Morning
New Playlist
1740
1726
1726
1706
1704
Playlist Manager
Duration
Name
1702
1760
1799
1720
1700
1718
1716
1714
1712
1710
1708

FIG. 17A

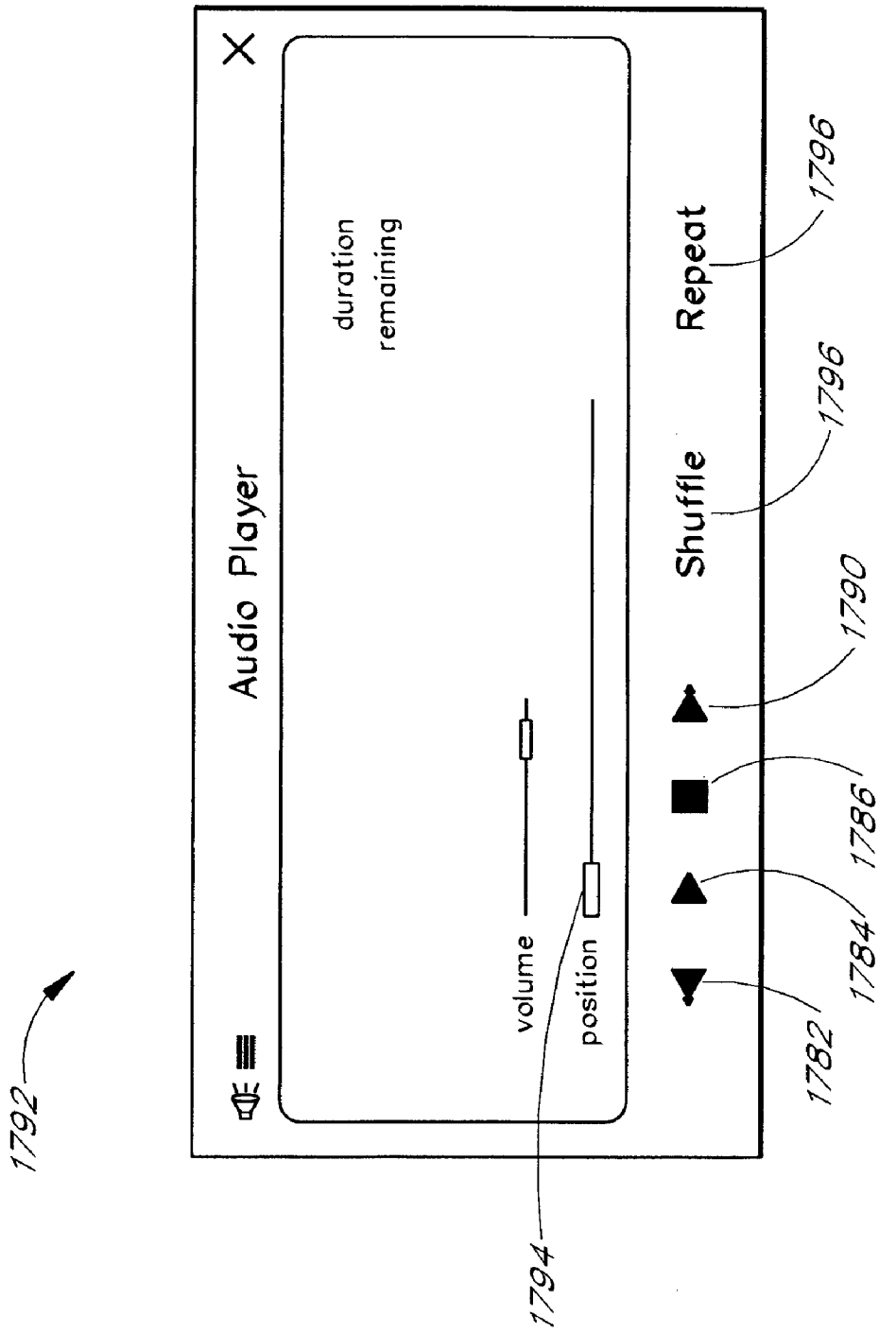

Audio Player
duration
remaining
Repeat
Shuffle
volume
position
1792
1794
1796
1796
1790
1786
1784
1782

FIG. 17B

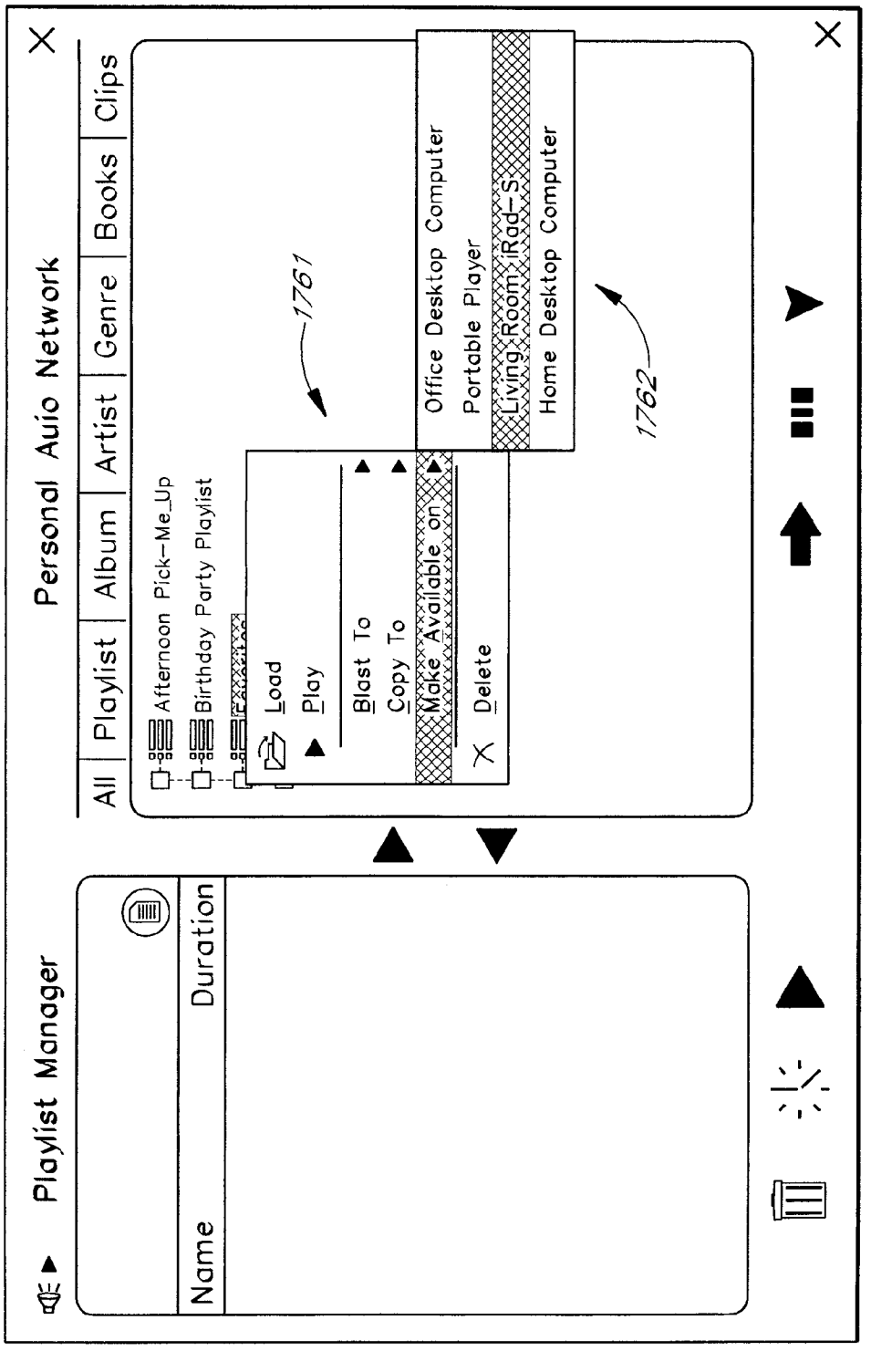

Personal Auio Network
All
Playlist
Album
Artist
Genre
Books
Clips
Afternoon Pick-Me_Up
Birthday Party Playlist
Load
Play
Blast To
Copy To
Make Available on
Delete
Office Desktop Computer
Portable Player
Living Room iRad-S
Home Desktop Computer
1761
1762
Playlist Manager
Name
Duration
1700

FIG. 17C

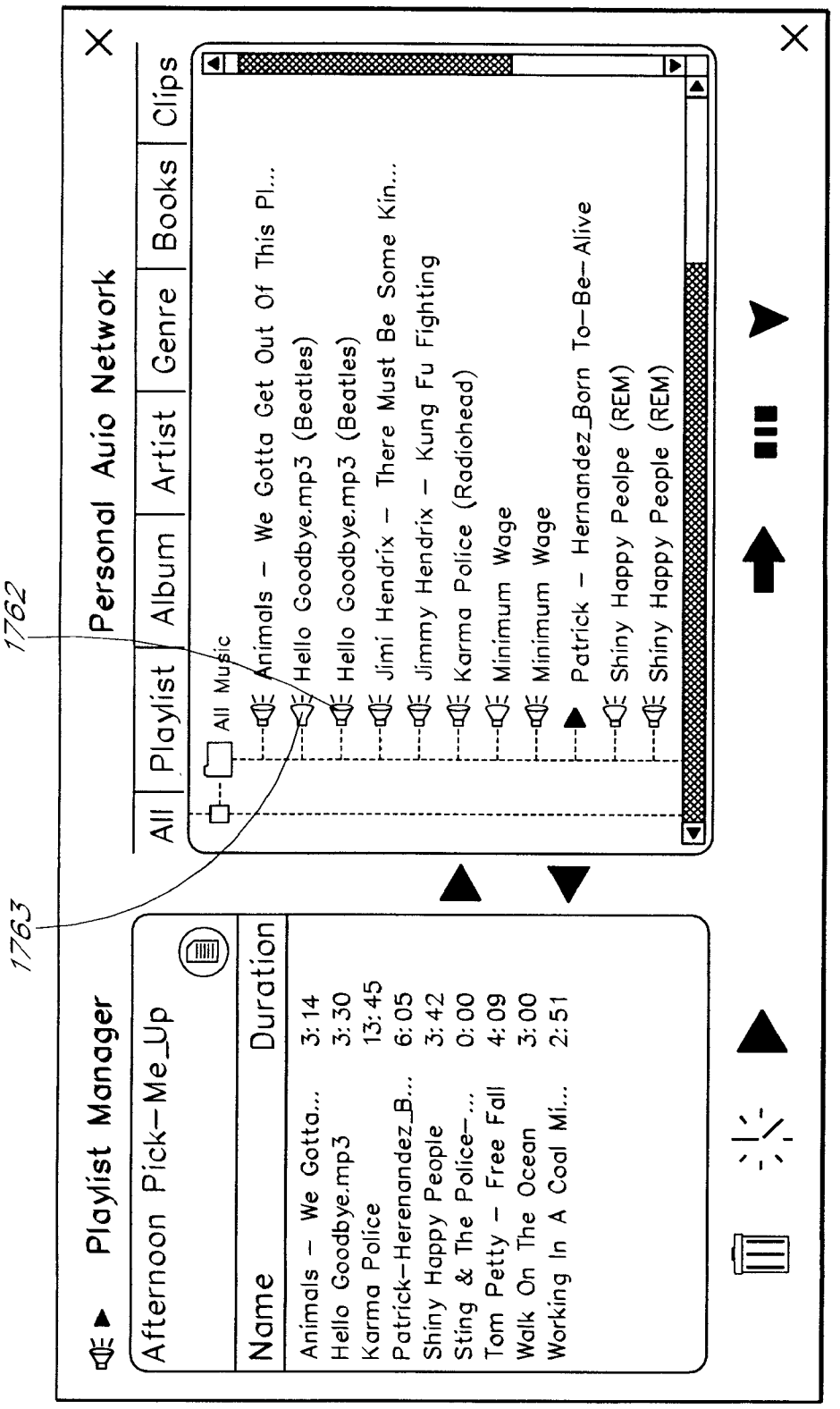

1762
1763
Personal Auio Network
All
Playlist
Album
Artist
Genre
Books
Clips
All Music
Animals – We Gotta Get Out Of This Pl...
Hello Goodbye.mp3 (Beatles)
Hello Goodbye.mp3 (Beatles)
Jimi Hendrix – There Must Be Some Kin...
Jimmy Hendrix – Kung Fu Fighting
Karma Police (Radiohead)
Minimum Wage
Minimum Wage
Patrick – Hernandez_Born To–Be–Alive
Shiny Happy Peolpe (REM)
Shiny Happy People (REM)
Playlist Manager
Afternoon Pick–Me_Up
Name
Duration
Animals – We Gotta... 3:14
Hello Goodbye.mp3 3:30
Karma Police 13:45
Patrick–Herenandez_B... 6:05
Shiny Happy People 3:42
Sting & The Police–... 0:00
Tom Petty – Free Fall 4:09
Walk On The Ocean 3:00
Working In A Coal Mi... 2:51

FIG. 17D

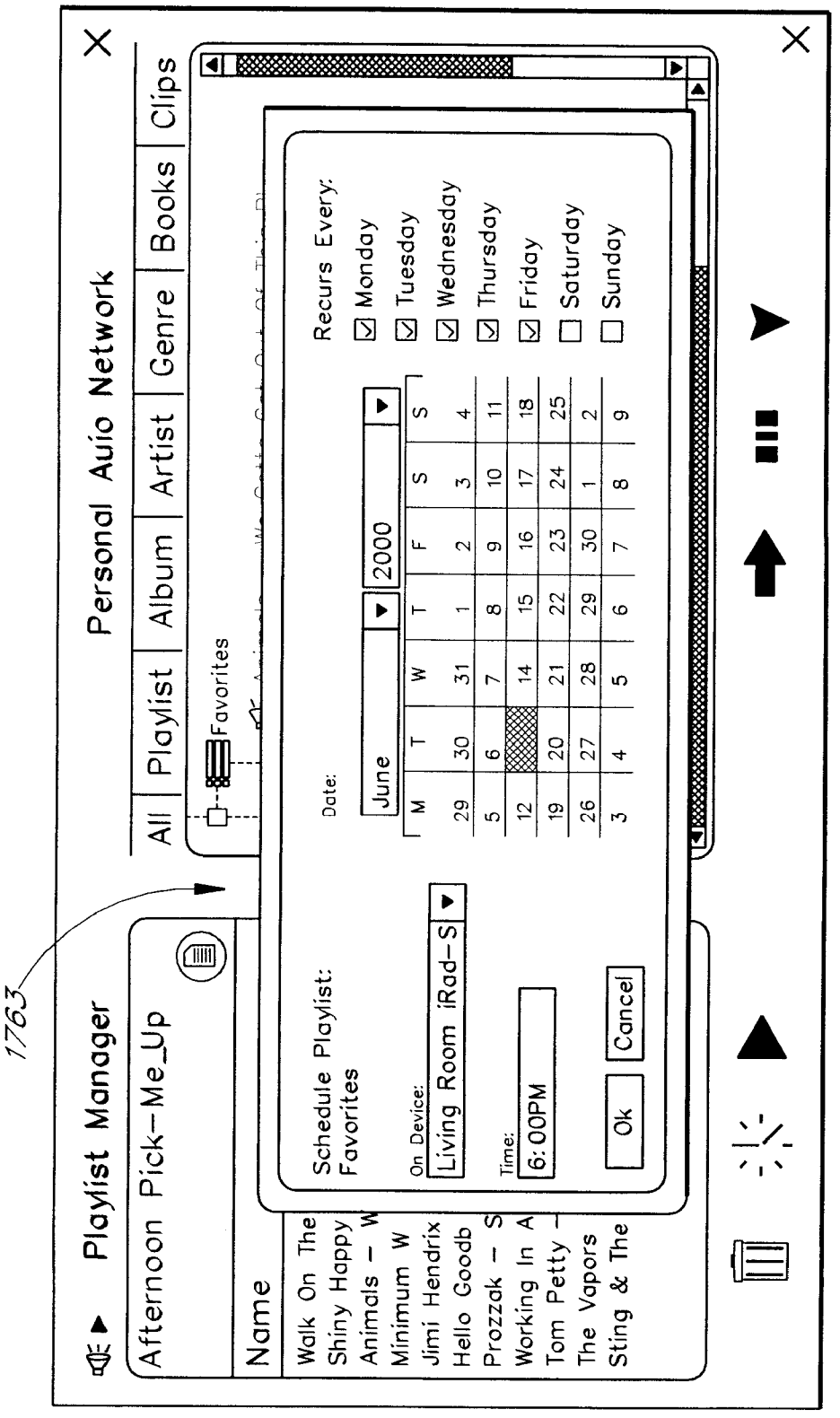

1763
Playlist Manager
Personal Auio Network
All
Playlist
Album
Artist
Genre
Books
Clips
Favorites
Afternoon Pick-Me_Up
Name
Walk On The
Shiny Happy
Animals – W
Minimum W
Jimi Hendrix
Hello Goodb
Prozzak – S
Working In A
Tom Petty –
The Vapors
Sting & The
Schedule Playlist:
Favorites
On Device:
Living Room iRad-S
Time:
6:00PM
Ok
Cancel
Date:
June
2000
Recurs Every:
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday

FIG. 17E

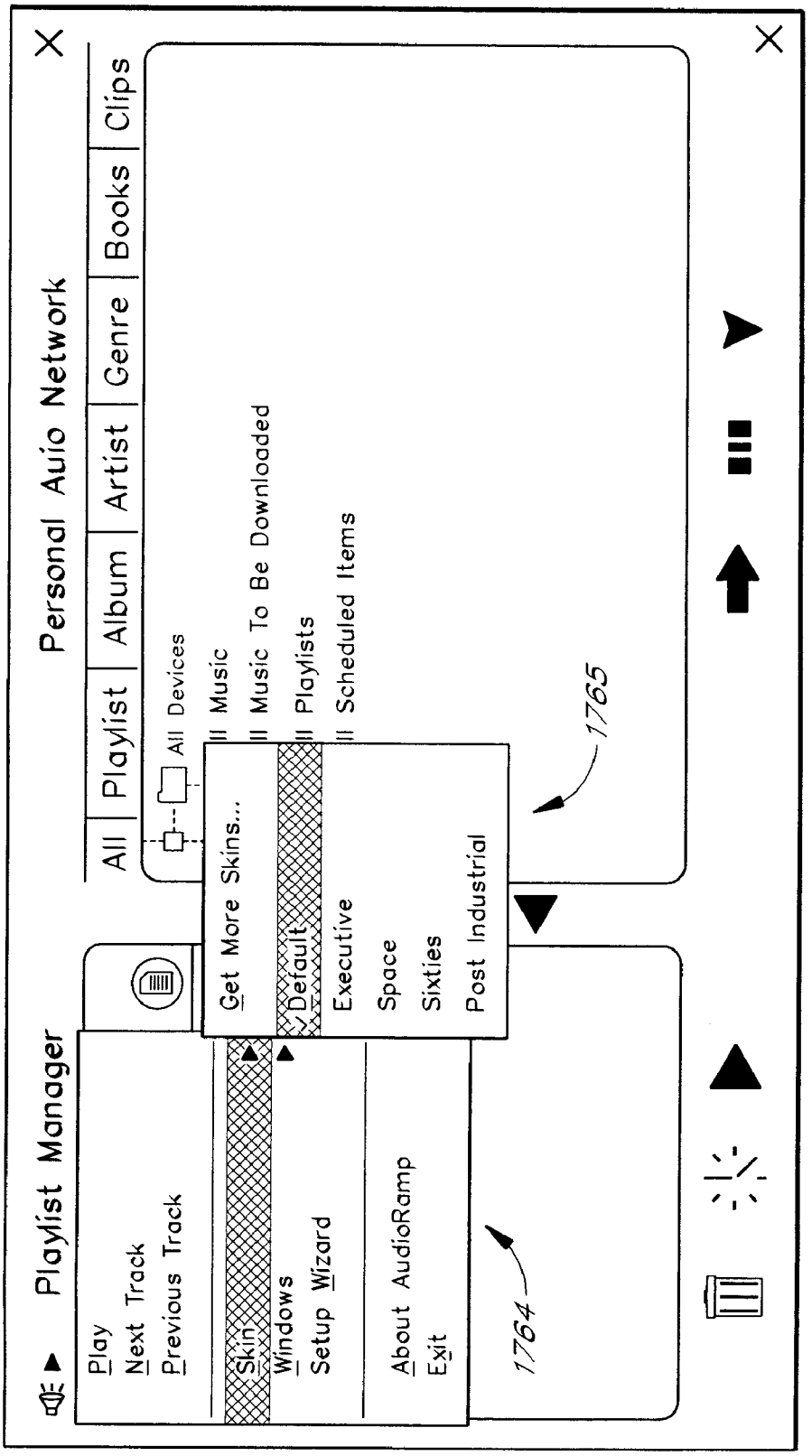

Personal Auio Network
All
Playlist
Album
Artist
Genre
Books
Clips
All Devices
Music
Music To Be Downloaded
Playlists
Scheduled Items
Playlist Manager
Play
Next Track
Previous Track
Skin
Windows
Setup Wizard
About AudioRamp
Exit
Get More Skins...
Default
Executive
Space
Sixties
Post Industrial
1764
1765

FIG. 17F

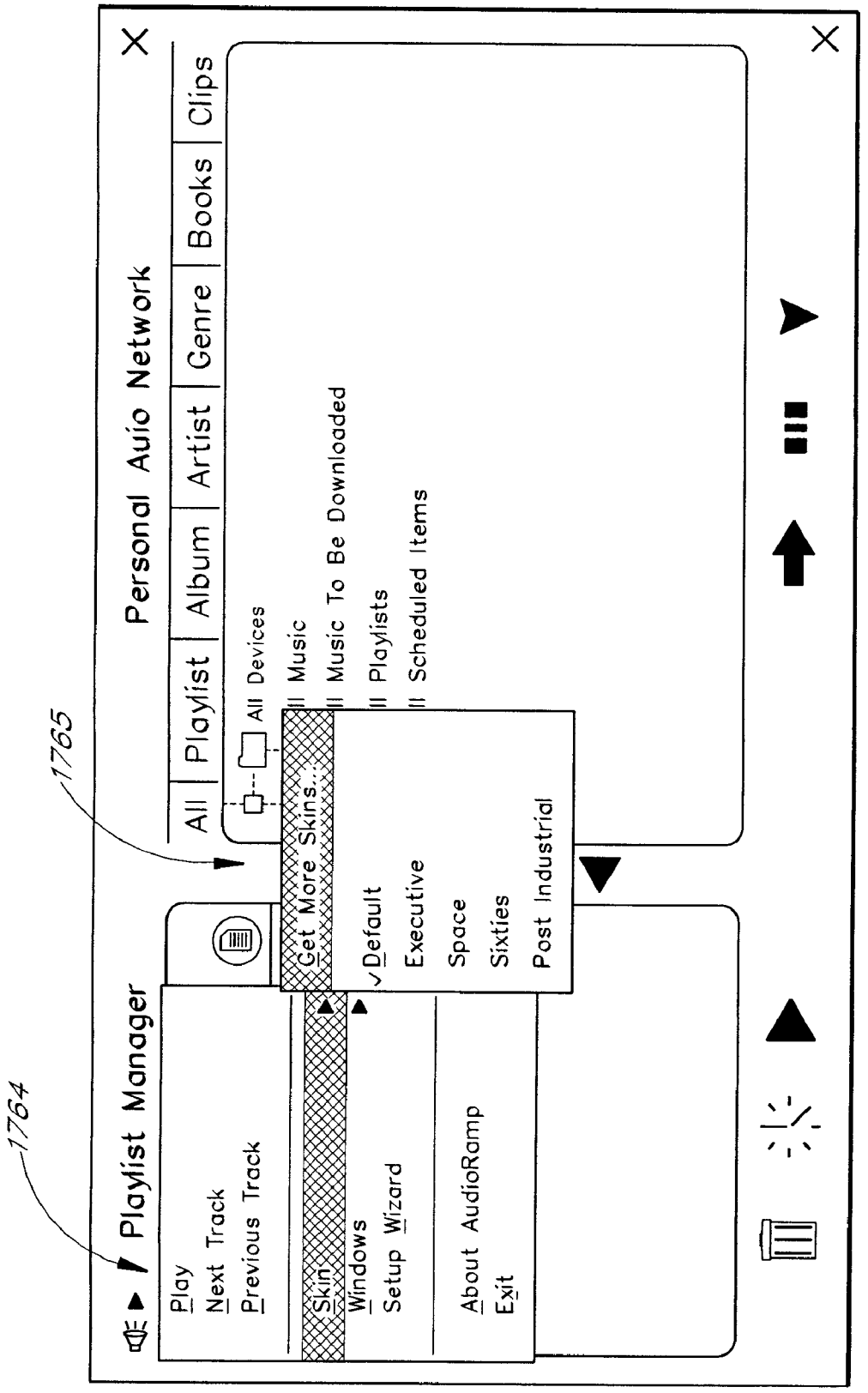

Personal Auio Network
All
Playlist
Album
Artist
Genre
Books
Clips
All Devices
Music
Music To Be Downloaded
Playlists
Scheduled Items
Playlist Manager
Play
Next Track
Previous Track
Skin
Get More Skins...
Default
Executive
Space
Sixties
Post Industrial
Windows
Setup Wizard
About AudioRamp
Exit
1764
1765

FIG. 17G

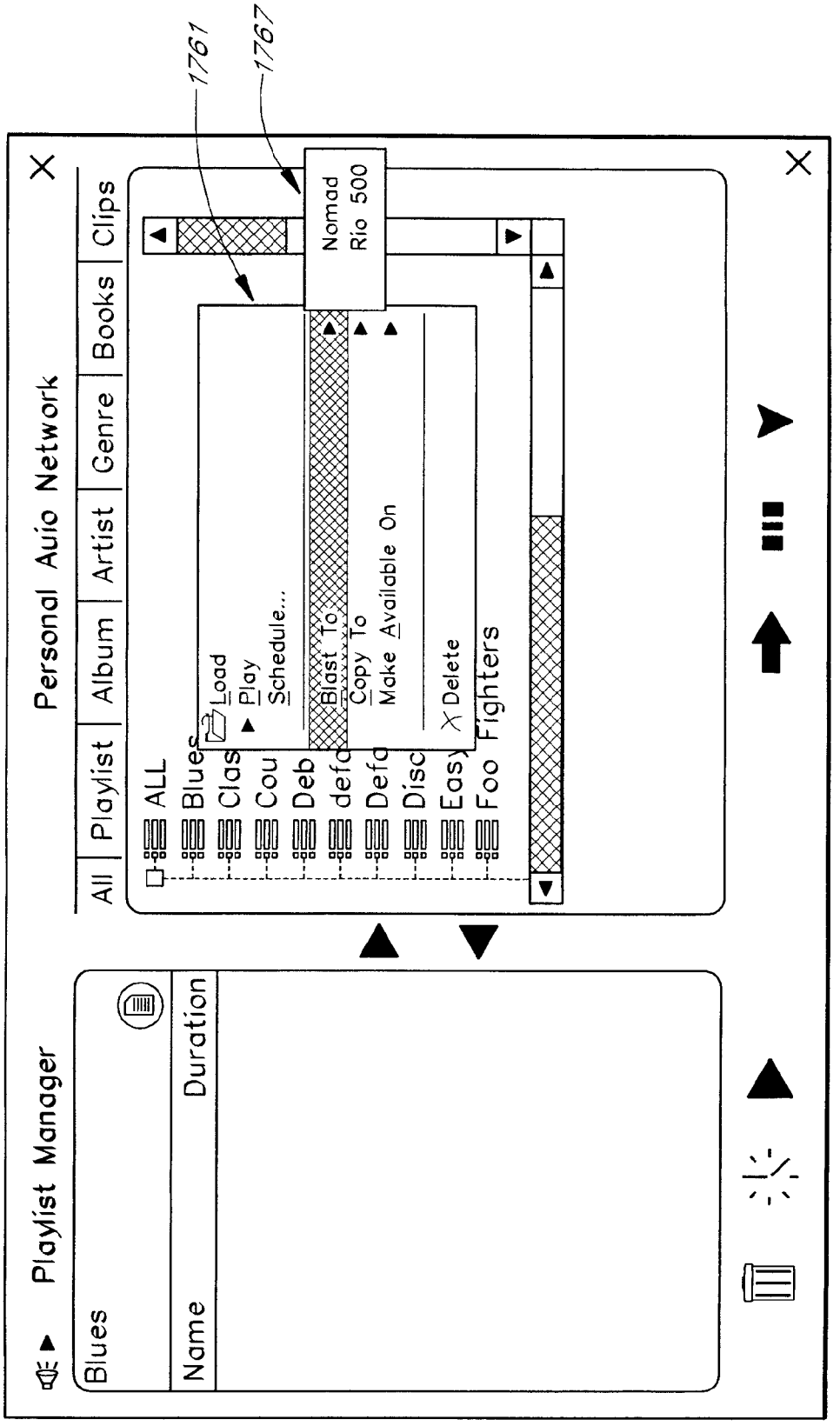

1761
1767
Personal Auio Network
All
Playlist
Album
Artist
Genre
Books
Clips
Nomad Rio 500
ALL
Blues
Clas
Cou
Deb
defa
Defa
Disc
Easy
Foo Fighters
Load
Play
Schedule...
Blast To
Copy To
Make Available On
Delete
Playlist Manager
Blues
Name
Duration

FIG. 17H

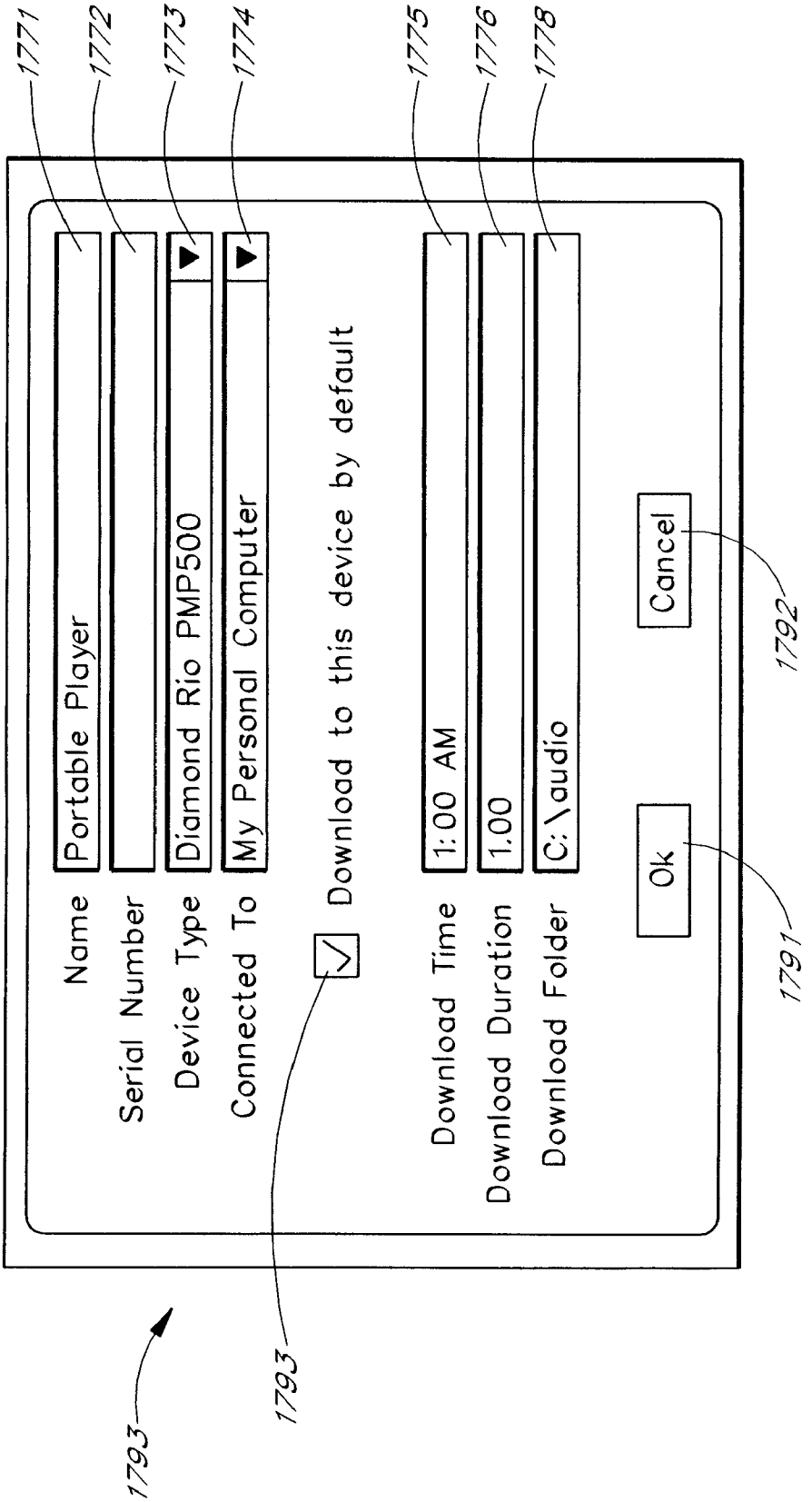

1771
1772
1773
1774
1775
1776
1778
Name
Portable Player
Serial Number
Device Type
Diamond Rio PMP500
Connected To
My Personal Computer
Download to this device by default
Download Time
1:00 AM
Download Duration
1.00
Download Folder
C:\audio
Ok
Cancel
1791
1792
1793
1793

FIG. 171

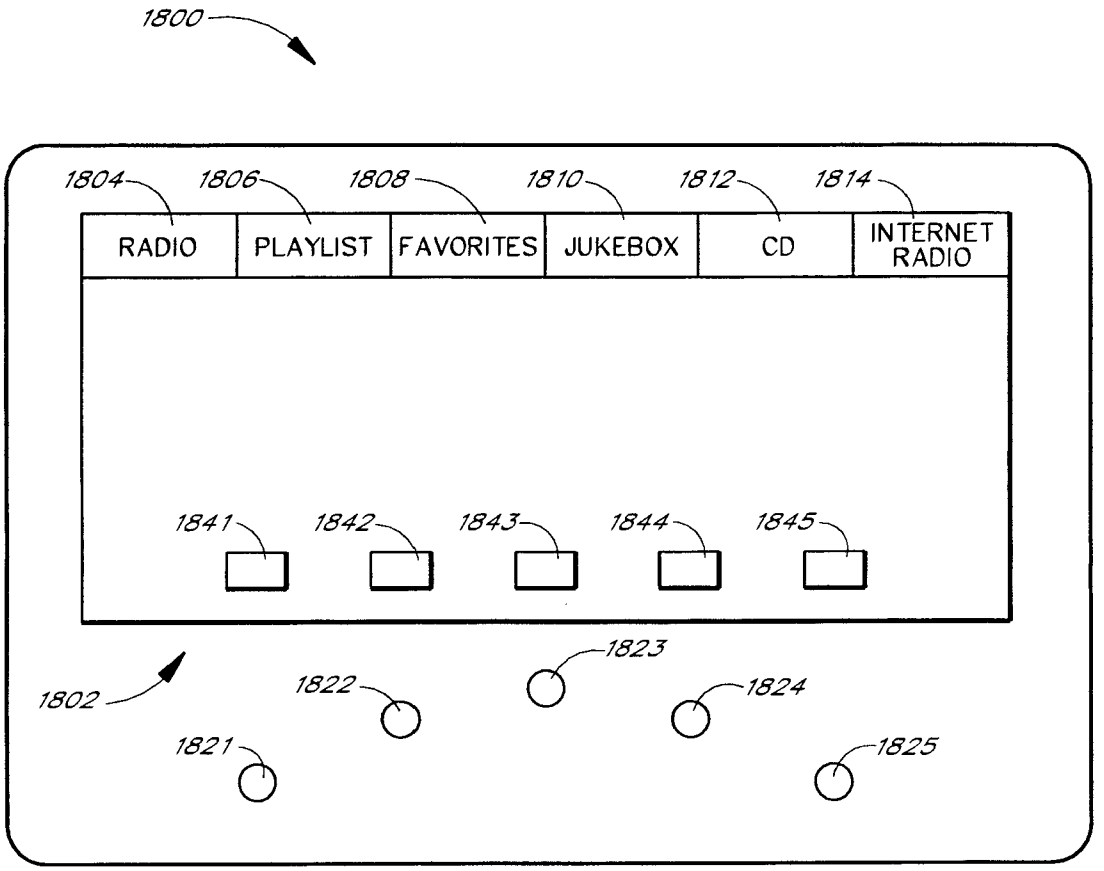

1800
1804
1806
1808
1810
1812
1814
RADIO
PLAYLIST
FAVORITES
JUKEBOX
CD
INTERNET RADIO
1841
1842
1843
1844
1845
1802
1822
1823
1824
1821
1825

FIG. 18A

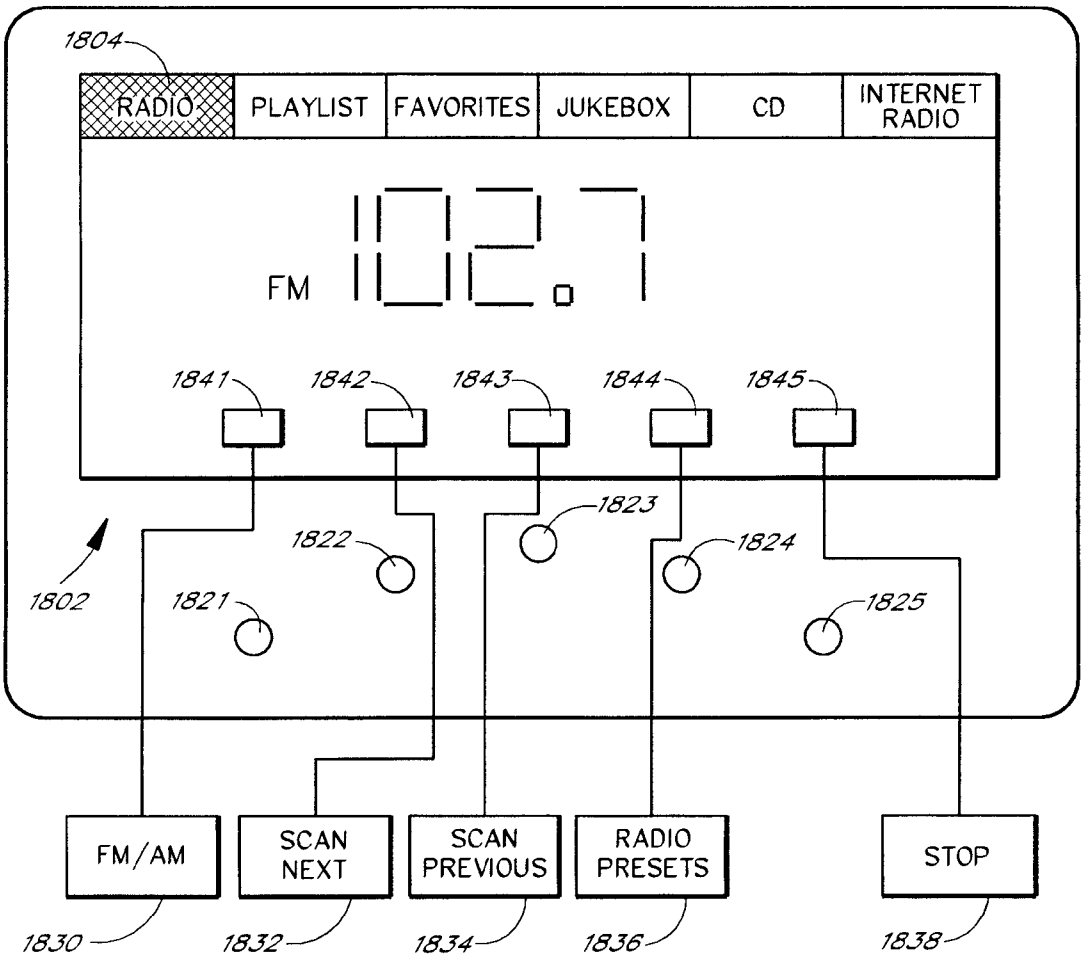

1804
RADIO
PLAYLIST
FAVORITES
JUKEBOX
CD
INTERNET RADIO
FM
1841
1842
1843
1844
1845
1823
1822
1824
1802
1821
1825
FM/AM
SCAN NEXT
SCAN PREVIOUS
RADIO PRESETS
STOP
1830
1832
1834
1836
1838

FIG. 18B

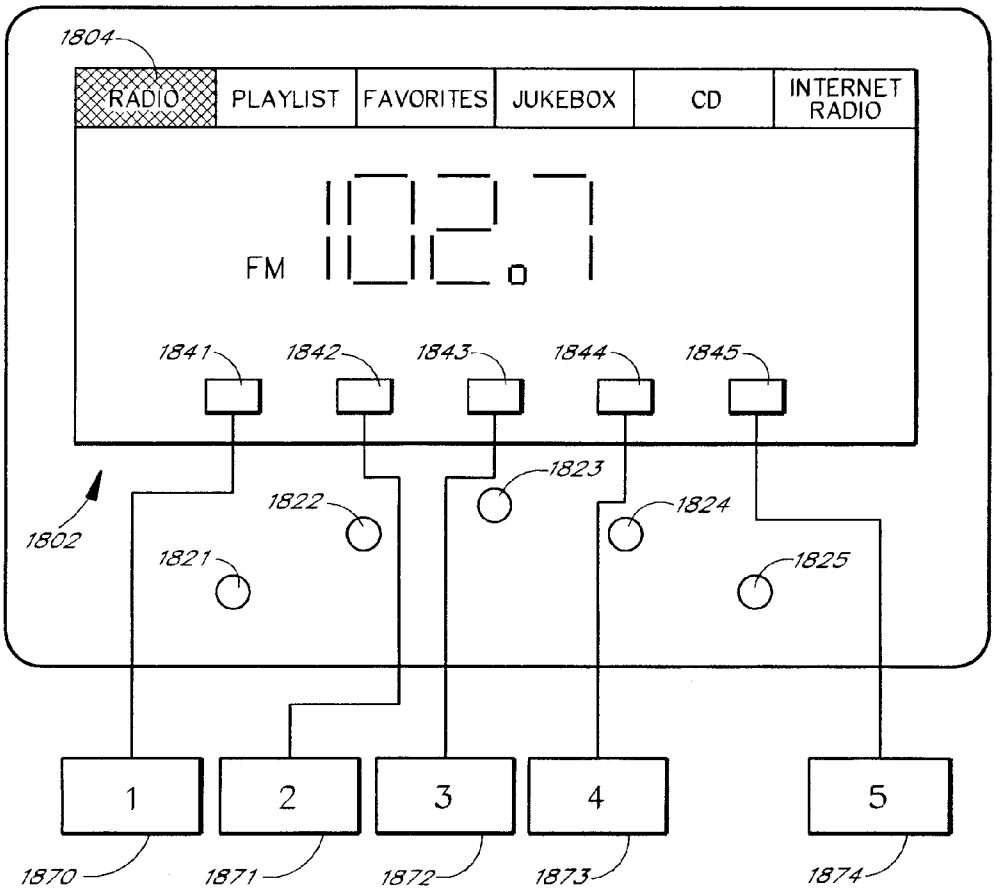

1804
RADIO
PLAYLIST
FAVORITES
JUKEBOX
CD
INTERNET RADIO
FM
102.7
1841
1842
1843
1844
1845
1802
1822
1823
1824
1821
1825
1
2
3
4
5
1870
1871
1872
1873
1874

FIG. 18C

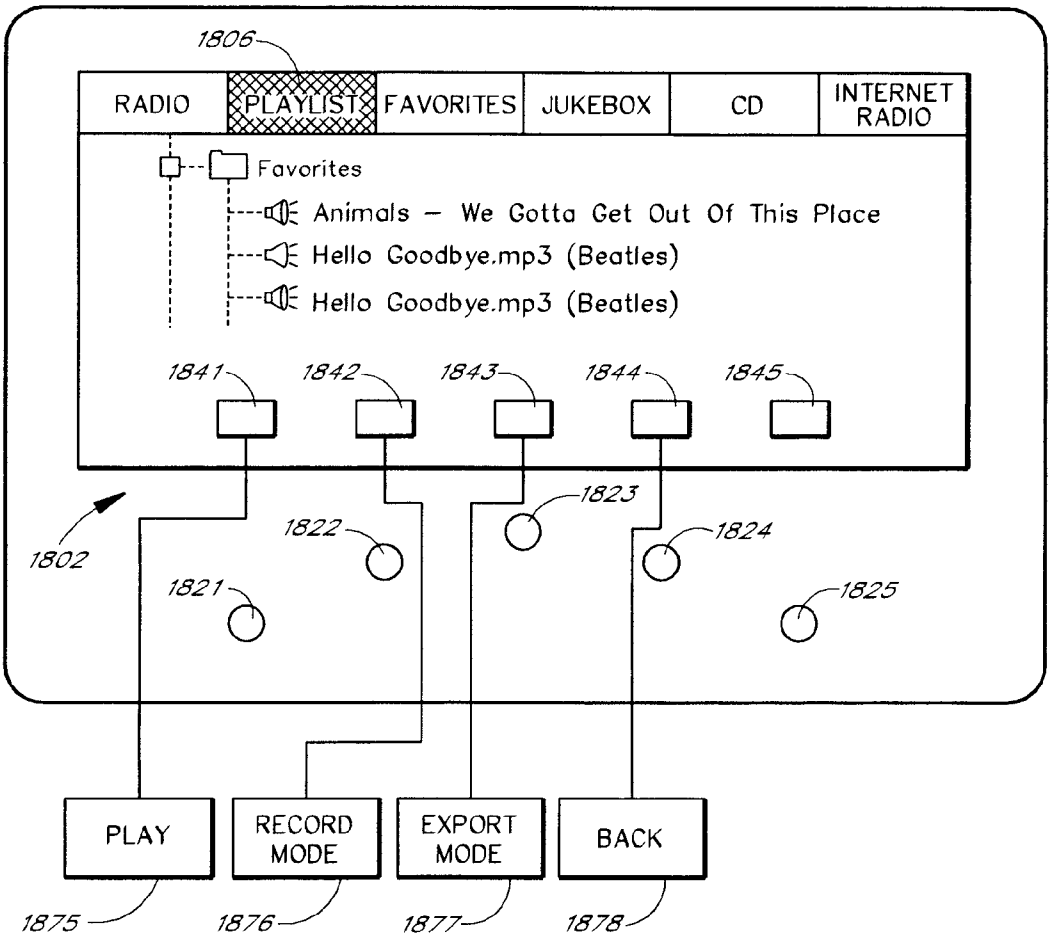

1806
RADIO
PLAYLIST
FAVORITES
JUKEBOX
CD
INTERNET RADIO
Favorites
Animals – We Gotta Get Out Of This Place
Hello Goodbye.mp3 (Beatles)
Hello Goodbye.mp3 (Beatles)
1841
1842
1843
1844
1845
1802
1821
1822
1823
1824
1825
PLAY
RECORD MODE
EXPORT MODE
BACK
1875
1876
1877
1878

FIG. 18D

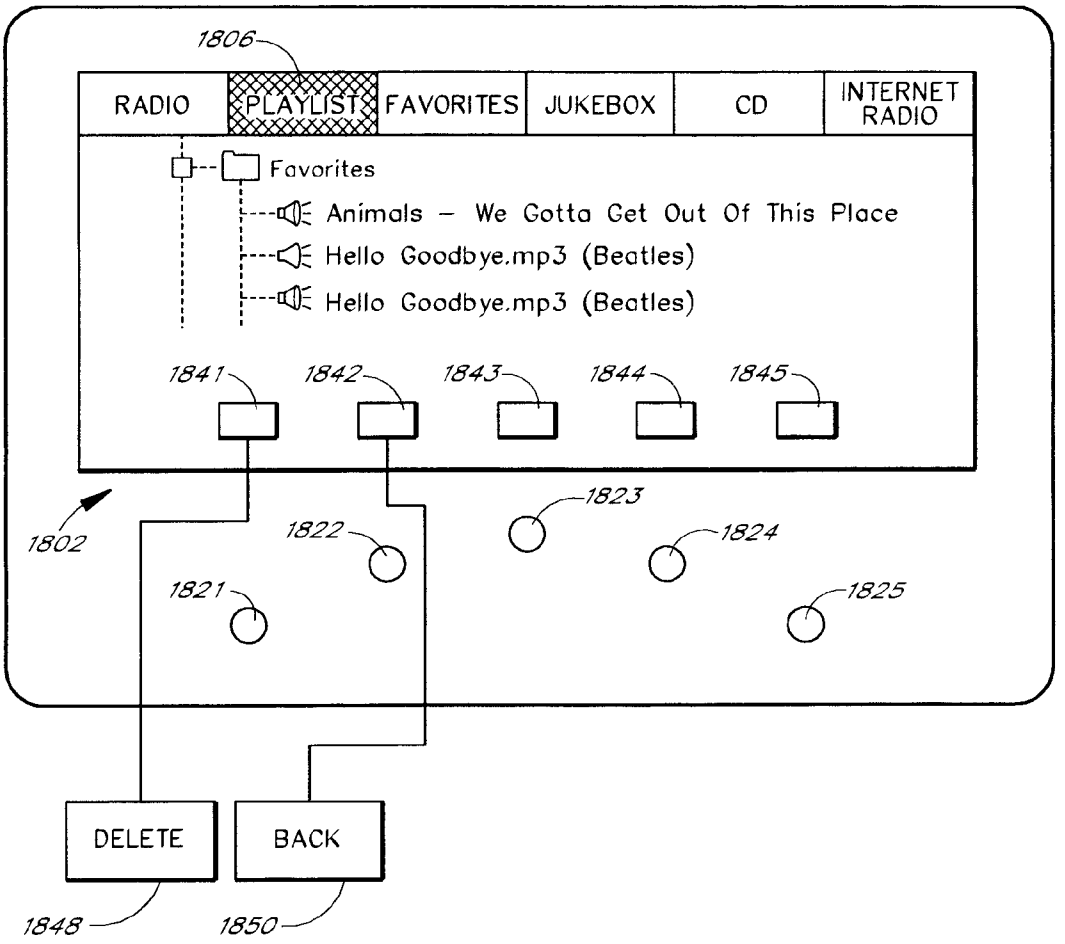

1806
RADIO
PLAYLIST
FAVORITES
JUKEBOX
CD
INTERNET RADIO
Favorites
Animals – We Gotta Get Out Of This Place
Hello Goodbye.mp3 (Beatles)
Hello Goodbye.mp3 (Beatles)
1841
1842
1843
1844
1845
1802
1821
1822
1823
1824
1825
DELETE
BACK
1848
1850

FIG. 18E

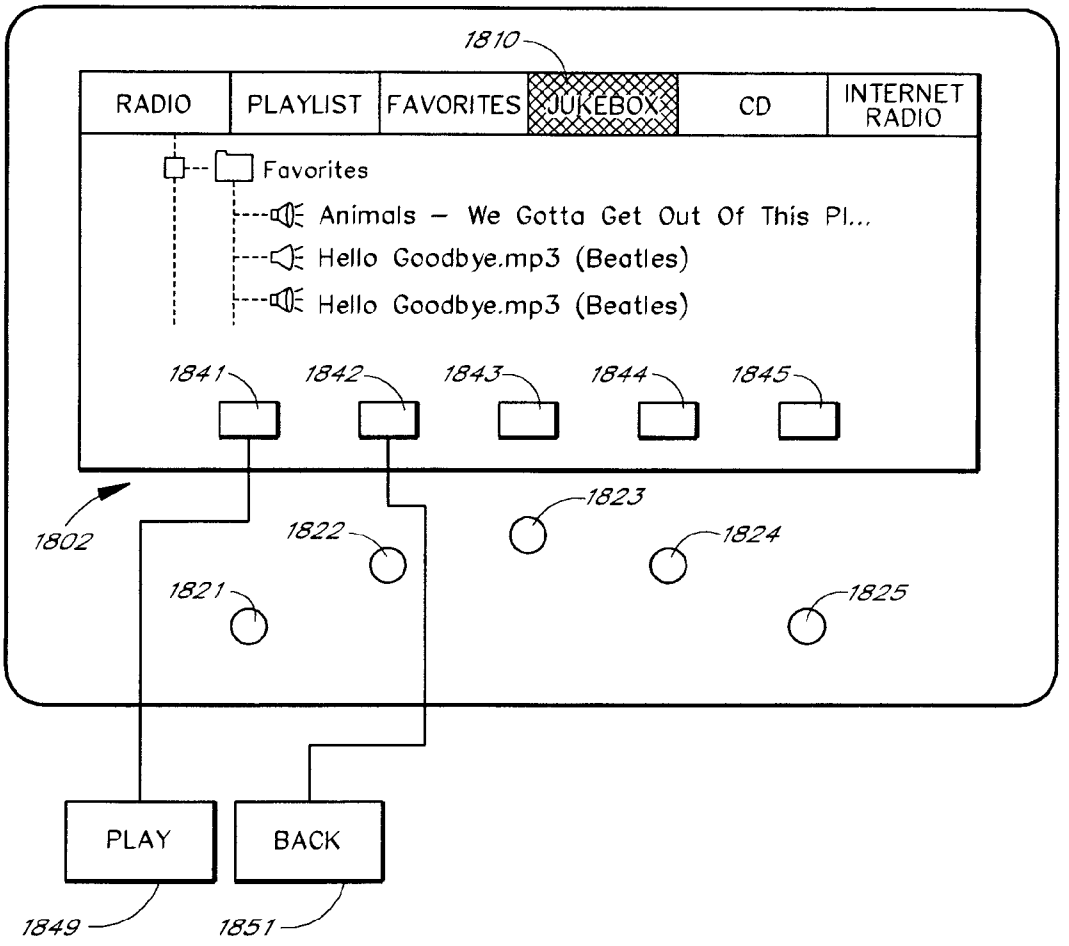

1810
RADIO
PLAYLIST
FAVORITES
JUKEBOX
CD
INTERNET RADIO
Favorites
Animals – We Gotta Get Out Of This Pl...
Hello Goodbye.mp3 (Beatles)
Hello Goodbye.mp3 (Beatles)
1841
1842
1843
1844
1845
1802
1822
1823
1824
1821
1825
PLAY
BACK
1849
1851

FIG. 18F

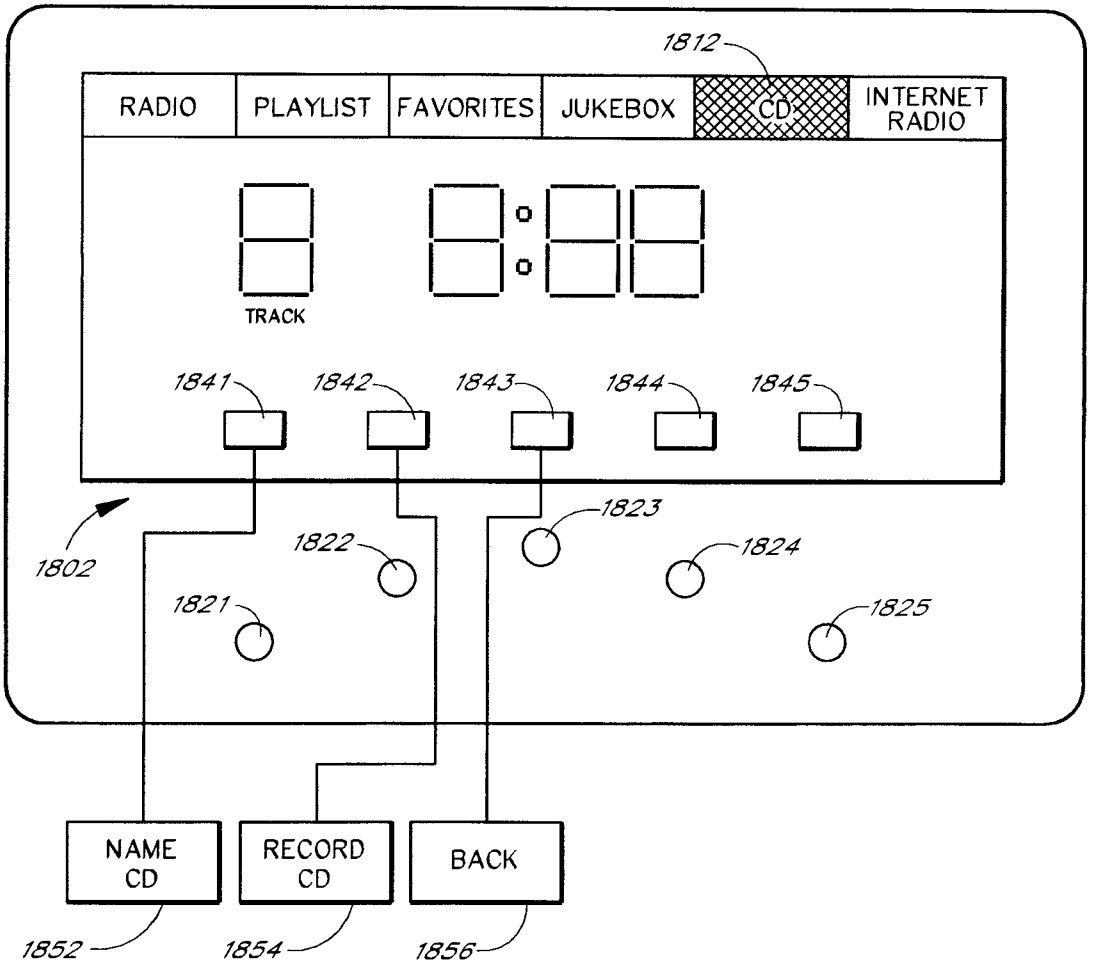

1812
RADIO
PLAYLIST
FAVORITES
JUKEBOX
CD
INTERNET RADIO
TRACK
1841
1842
1843
1844
1845
1802
1822
1823
1824
1821
1825
NAME CD
RECORD CD
BACK
1852
1854
1856

FIG. 18G

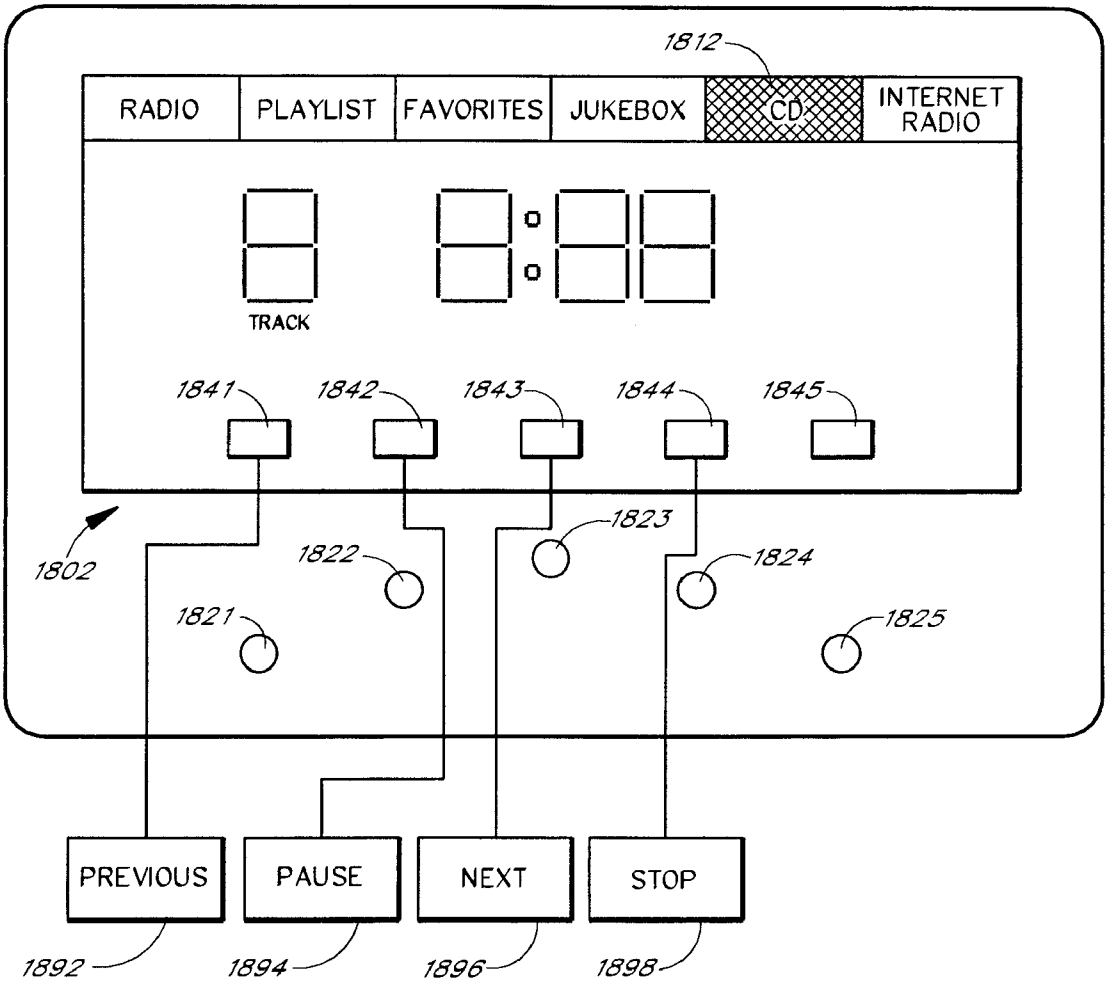

1812
RADIO
PLAYLIST
FAVORITES
JUKEBOX
CD
INTERNET RADIO
TRACK
1841
1842
1843
1844
1845
1802
1822
1823
1824
1821
1825
PREVIOUS
PAUSE
NEXT
STOP
1892
1894
1896
1898

FIG. 18H

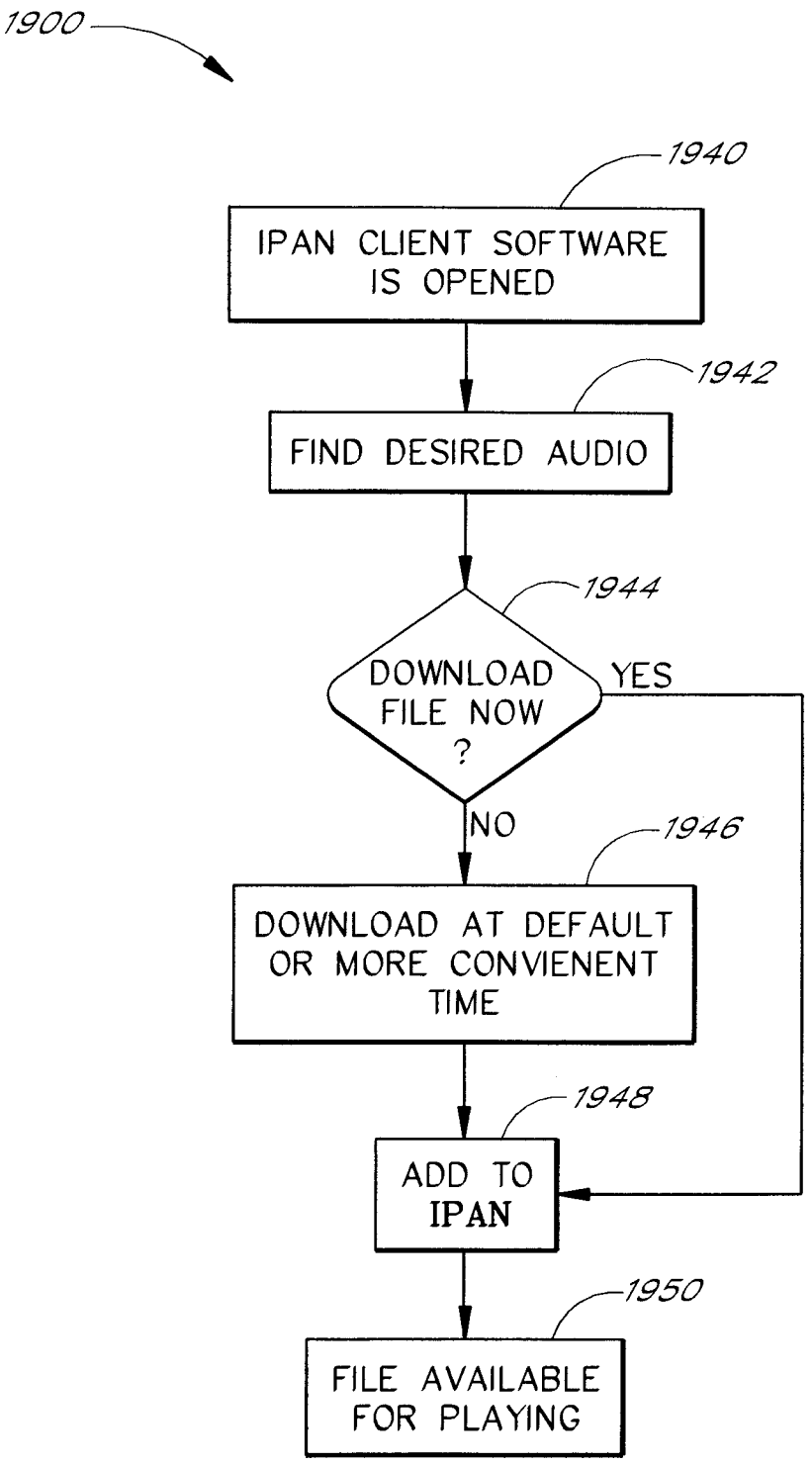

1900
1940
IPAN CLIENT SOFTWARE IS OPENED
1942
FIND DESIRED AUDIO
1944
DOWNLOAD FILE NOW ?
YES
NO
1946
DOWNLOAD AT DEFAULT OR MORE CONVIENENT TIME
1948
ADD TO IPAN
1950
FILE AVAILABLE FOR PLAYING

FIG. 19A

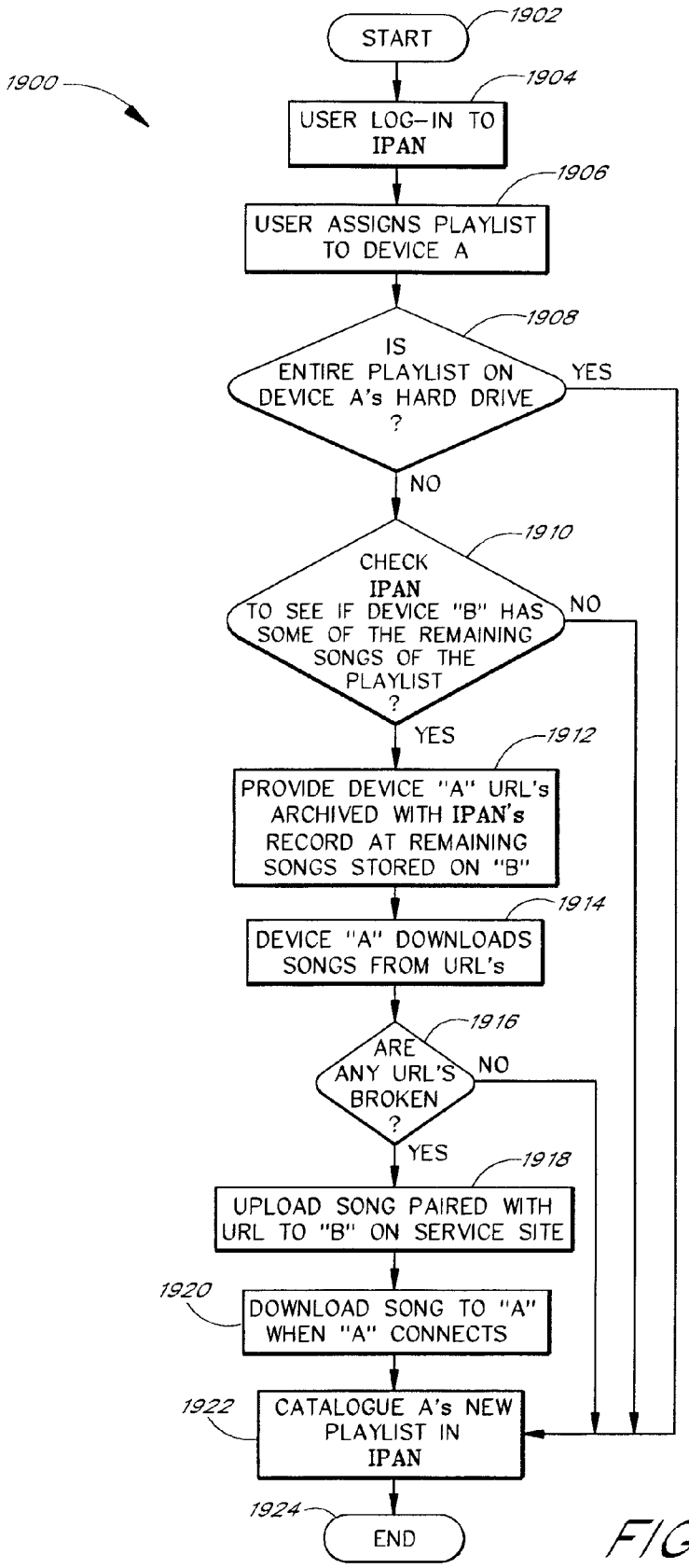

1900
START
1902
USER LOG-IN TO IPAN
1904
USER ASSIGNS PLAYLIST TO DEVICE A
1906
IS ENTIRE PLAYLIST ON DEVICE A's HARD DRIVE ?
1908
YES
NO
CHECK IPAN TO SEE IF DEVICE "B" HAS SOME OF THE REMAINING SONGS OF THE PLAYLIST ?
1910
NO
YES
PROVIDE DEVICE "A" URL's ARCHIVED WITH IPAN's RECORD AT REMAINING SONGS STORED ON "B"
1912
DEVICE "A" DOWNLOADS SONGS FROM URL's
1914
ARE ANY URL'S BROKEN ?
1916
NO
YES
UPLOAD SONG PAIRED WITH URL TO "B" ON SERVICE SITE
1918
DOWNLOAD SONG TO "A" WHEN "A" CONNECTS
1920
CATALOGUE A's NEW PLAYLIST IN IPAN
1922
END
1924

FIG. 19B

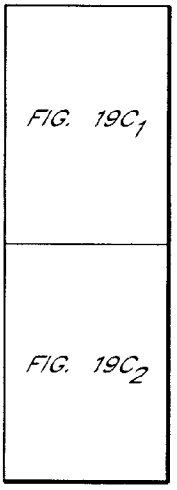
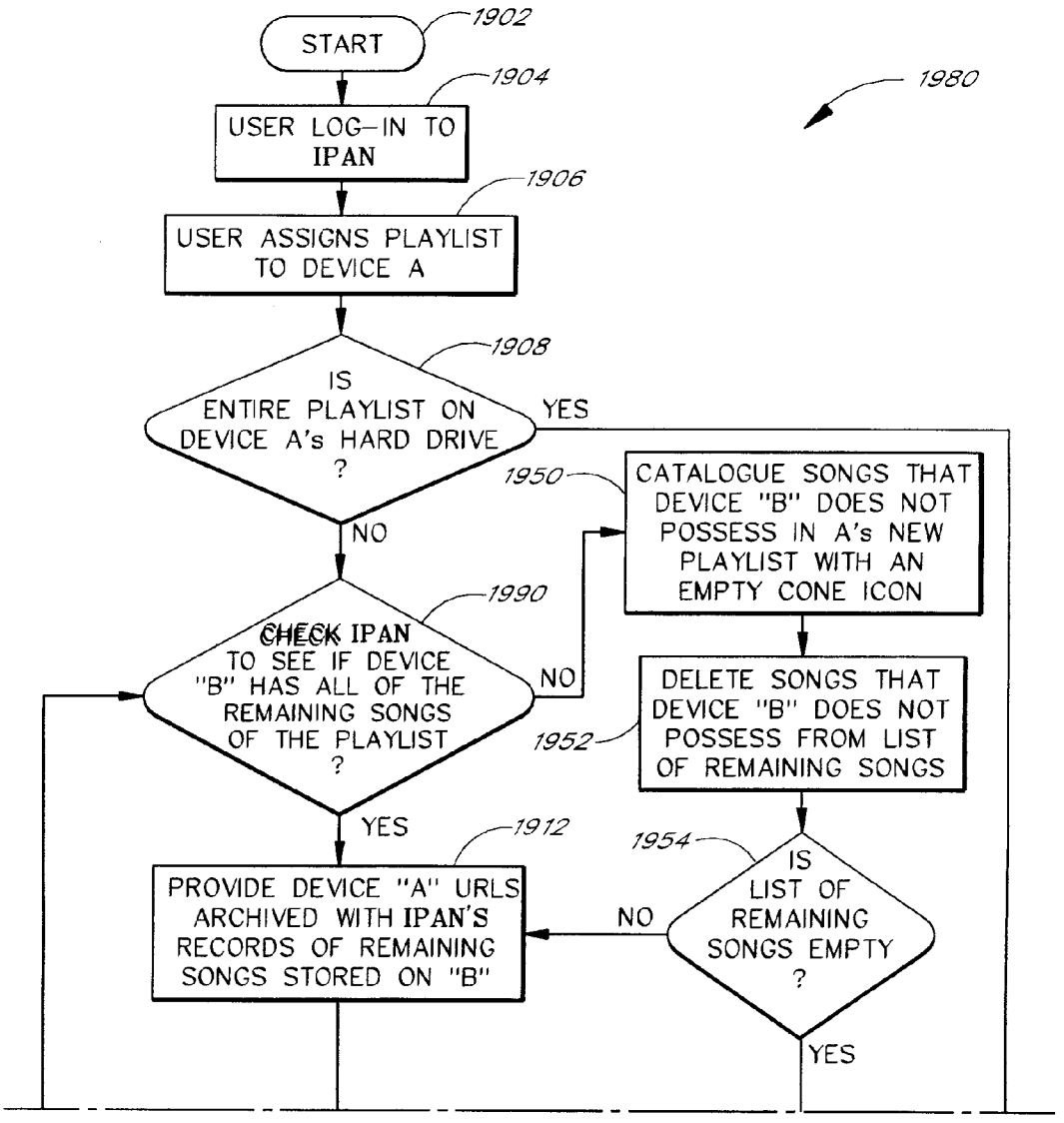


FIG. 19C

FIG. 19C1



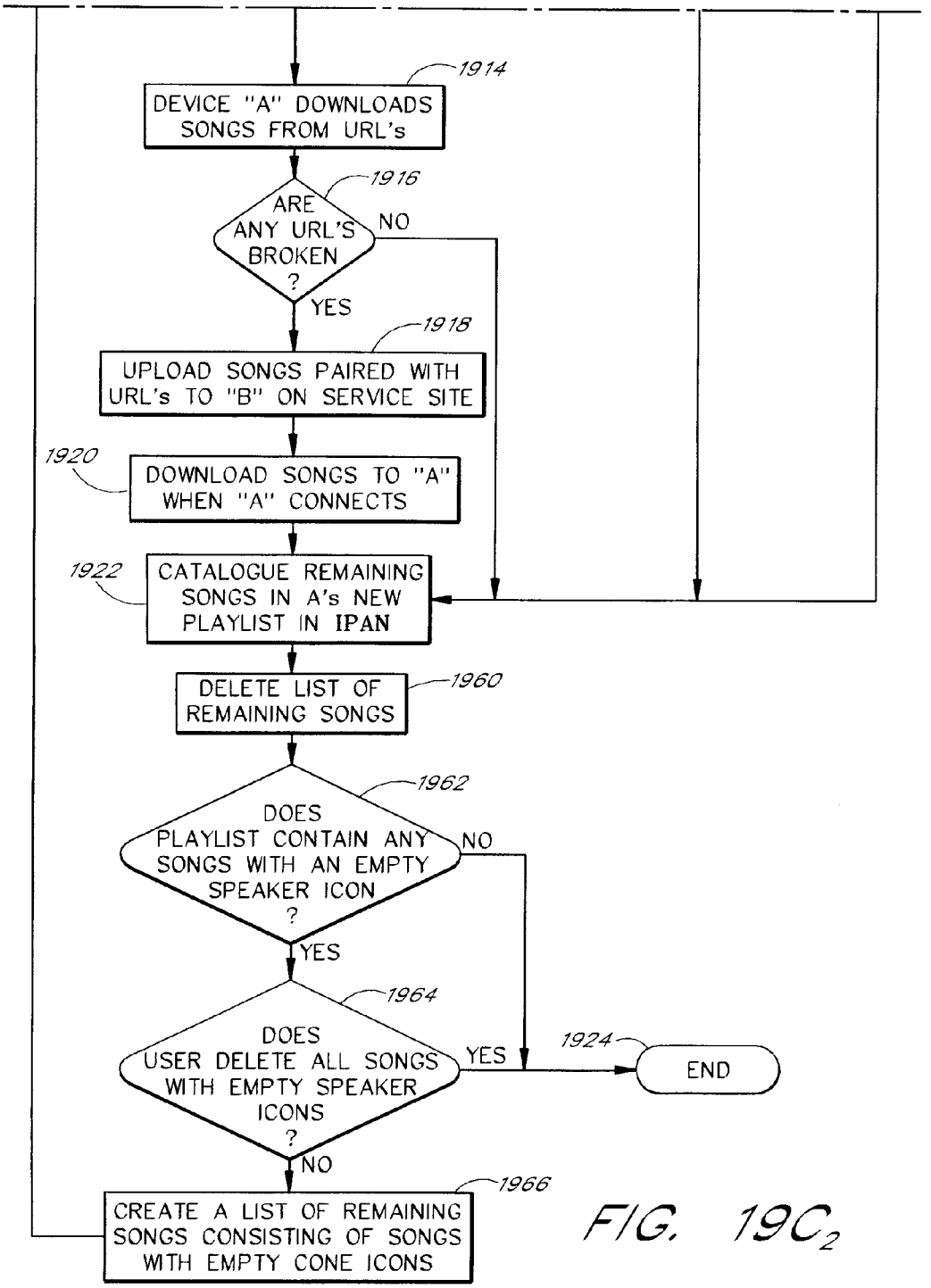

1914
DEVICE "A" DOWNLOADS SONGS FROM URL's
1916
ARE ANY URL'S BROKEN ?
NO
YES
1918
UPLOAD SONGS PAIRED WITH URL's TO "B" ON SERVICE SITE
1920
DOWNLOAD SONGS TO "A" WHEN "A" CONNECTS
1922
CATALOGUE REMAINING SONGS IN A's NEW PLAYLIST IN IPAN
1960
DELETE LIST OF REMAINING SONGS
1962
DOES PLAYLIST CONTAIN ANY SONGS WITH AN EMPTY SPEAKER ICON ?
NO
YES
1964
DOES USER DELETE ALL SONGS WITH EMPTY SPEAKER ICONS ?
YES
1924
END
NO
1966
CREATE A LIST OF REMAINING SONGS CONSISTING OF SONGS WITH EMPTY CONE ICONS

FIG. 19C2

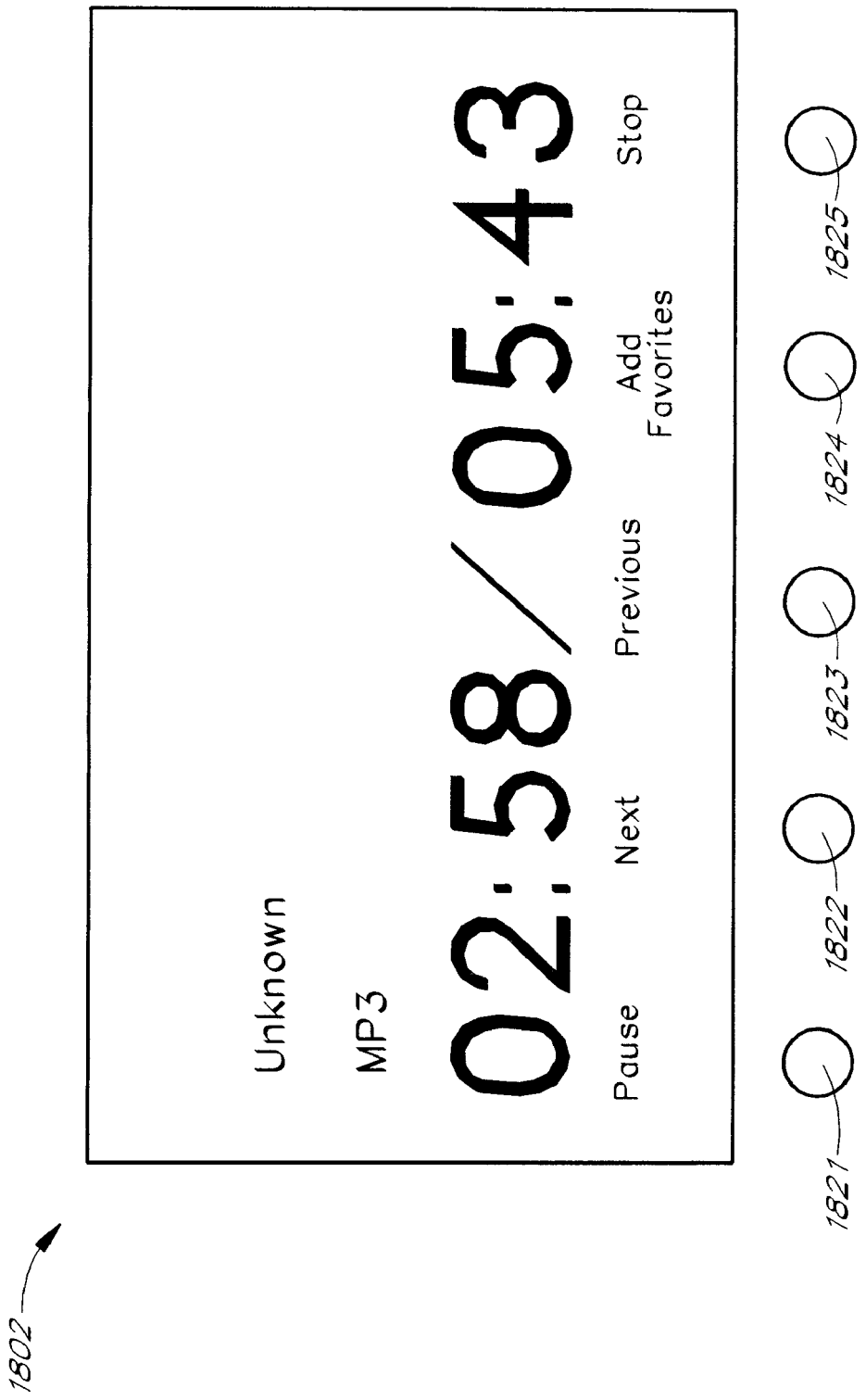

Unknown
MP3
02:58/05:43
Pause
Next
Previous
Add Favorites
Stop
1802
1821
1822
1823
1824
1825

FIG. 20A

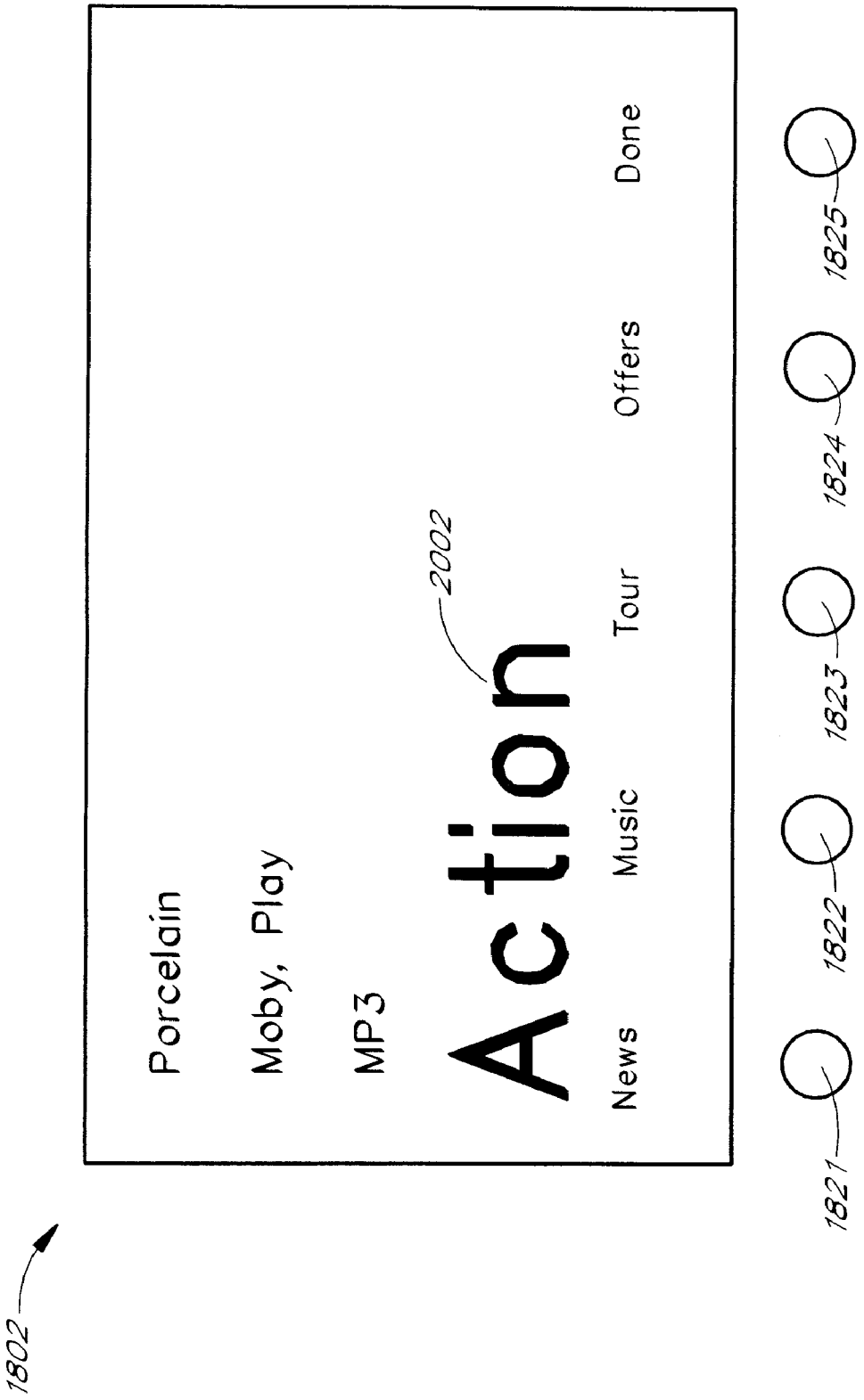

Porcelain
Moby, Play
MP3
Action
2002
News
Music
Tour
Offers
Done
1802
1821
1822
1823
1824
1825

FIG. 20B

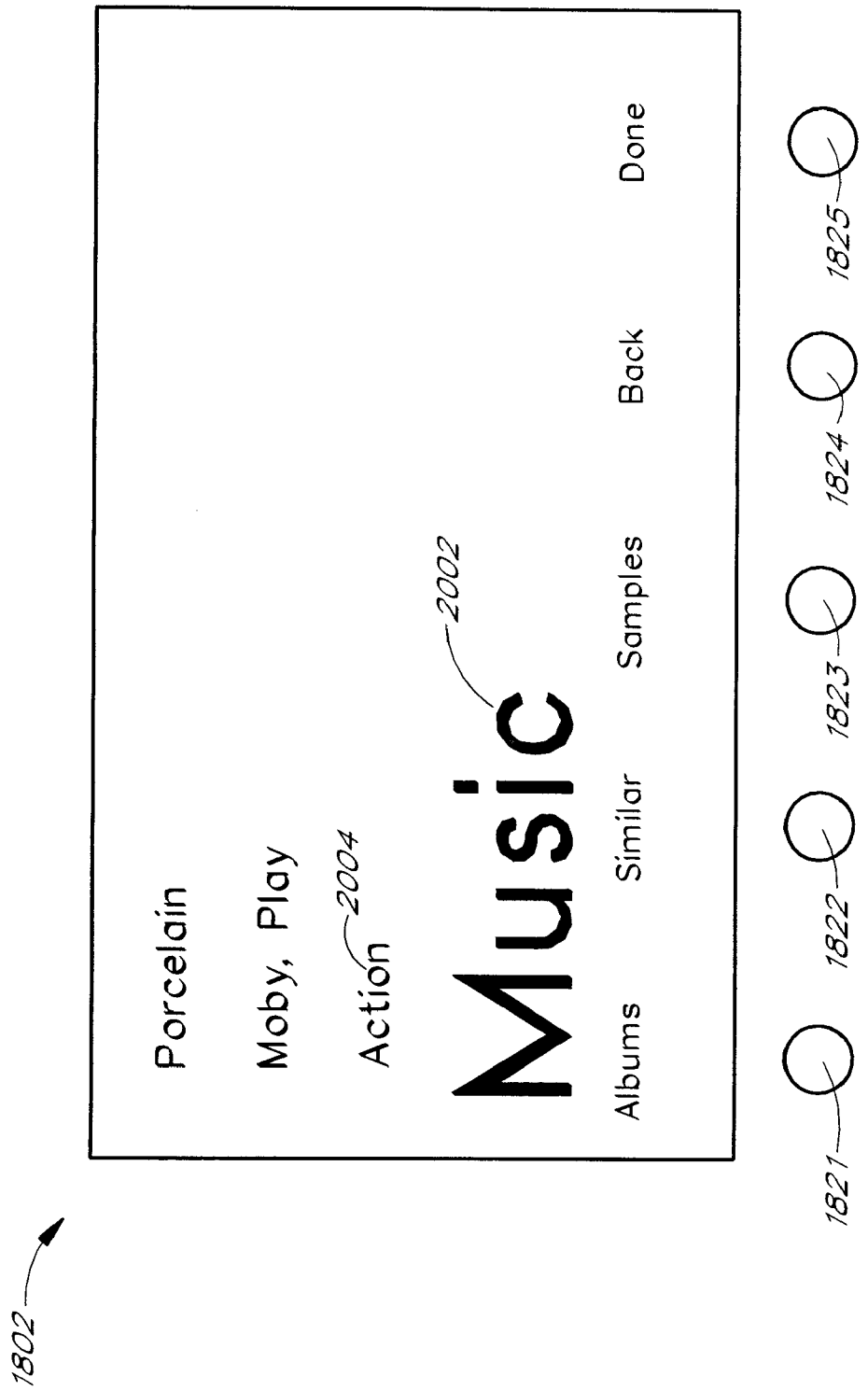

1802
Porcelain
Moby, Play
Action
2004
Music
2002
Albums
Similar
Samples
Back
Done
1821
1822
1823
1824
1825

FIG. 20C

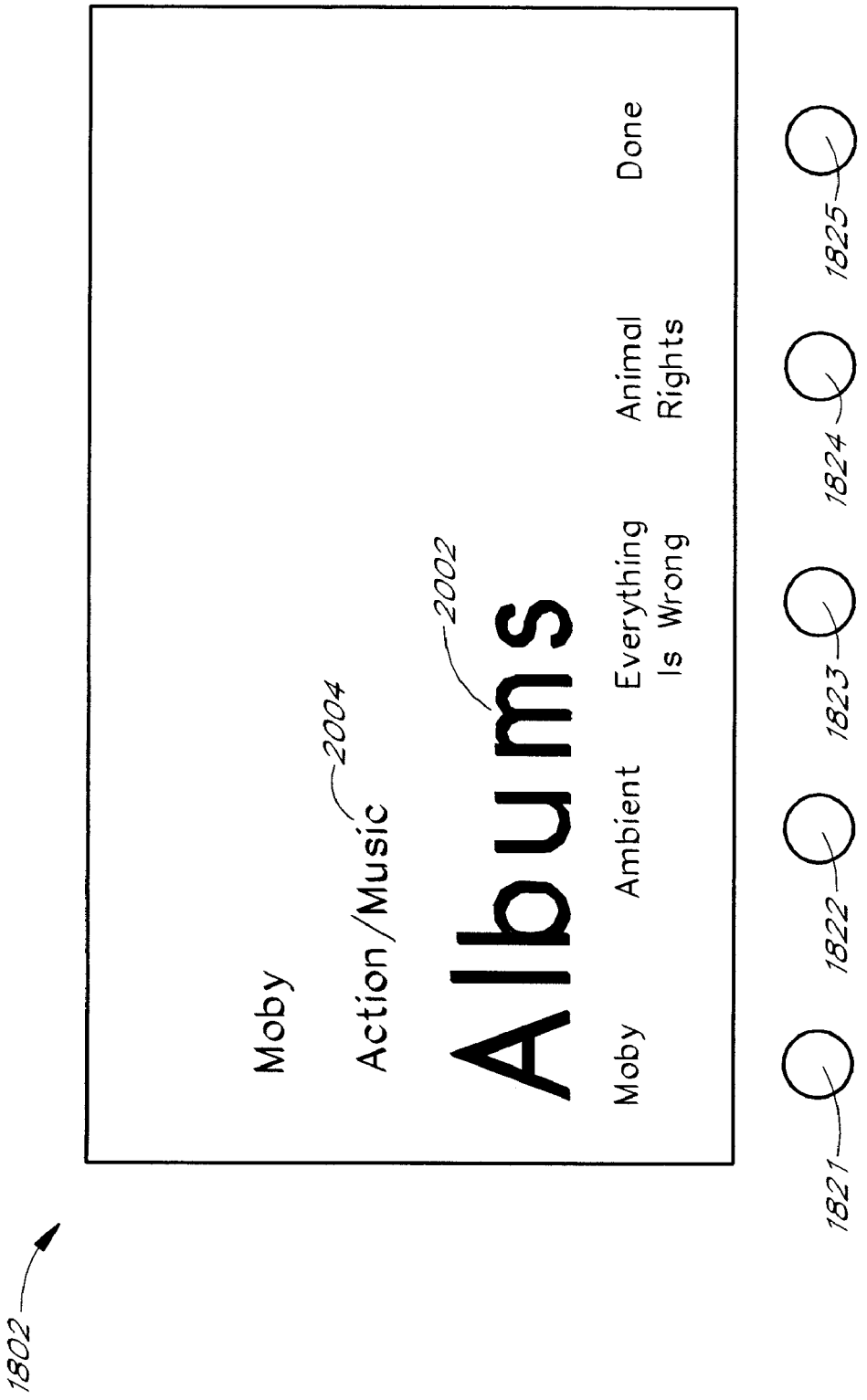

1802
Moby
Action/Music
2004
Albums
2002
Moby
Ambient
Everything Is Wrong
Animal Rights
Done
1821
1822
1823
1824
1825

FIG. 20D

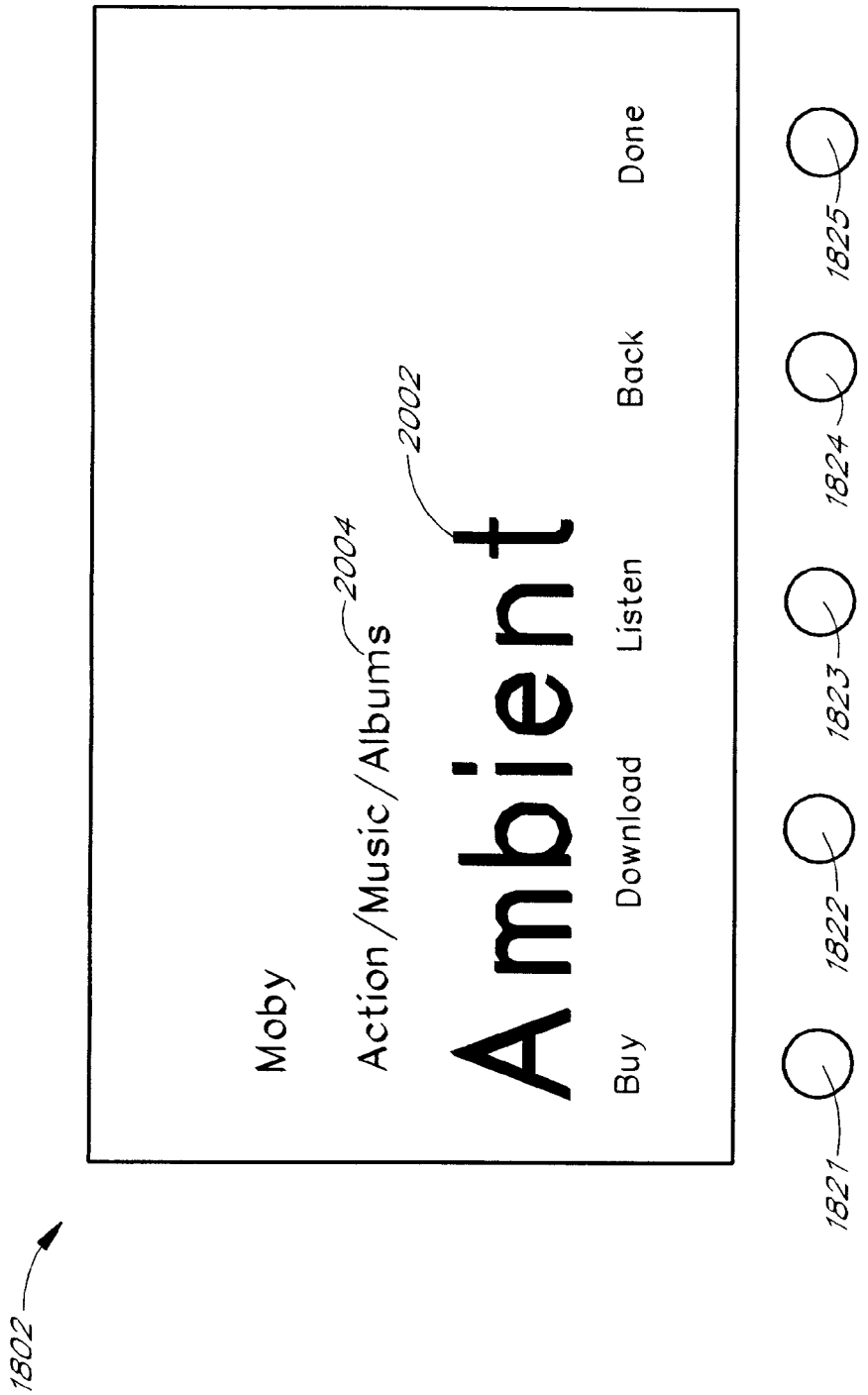

1802
Moby
Action/Music/Albums
2004
Ambient
2002
Buy
Download
Listen
Back
Done
1821
1822
1823
1824
1825

FIG. 20E

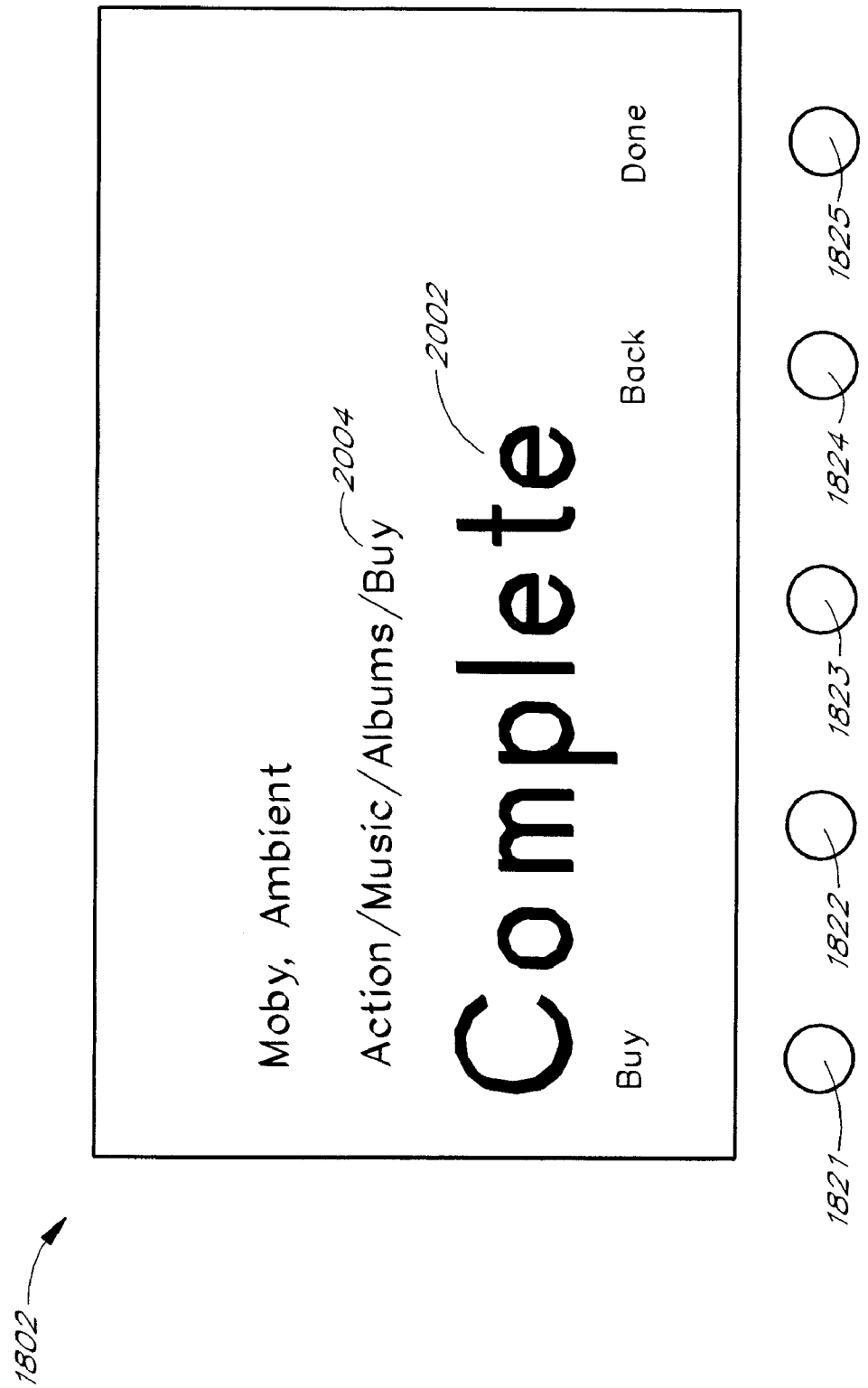

1802
Moby, Ambient
Action/Music/Albums/Buy
2004
2002
Complete
Buy
Back
Done
1821
1822
1823
1824
1825

FIG. 20F

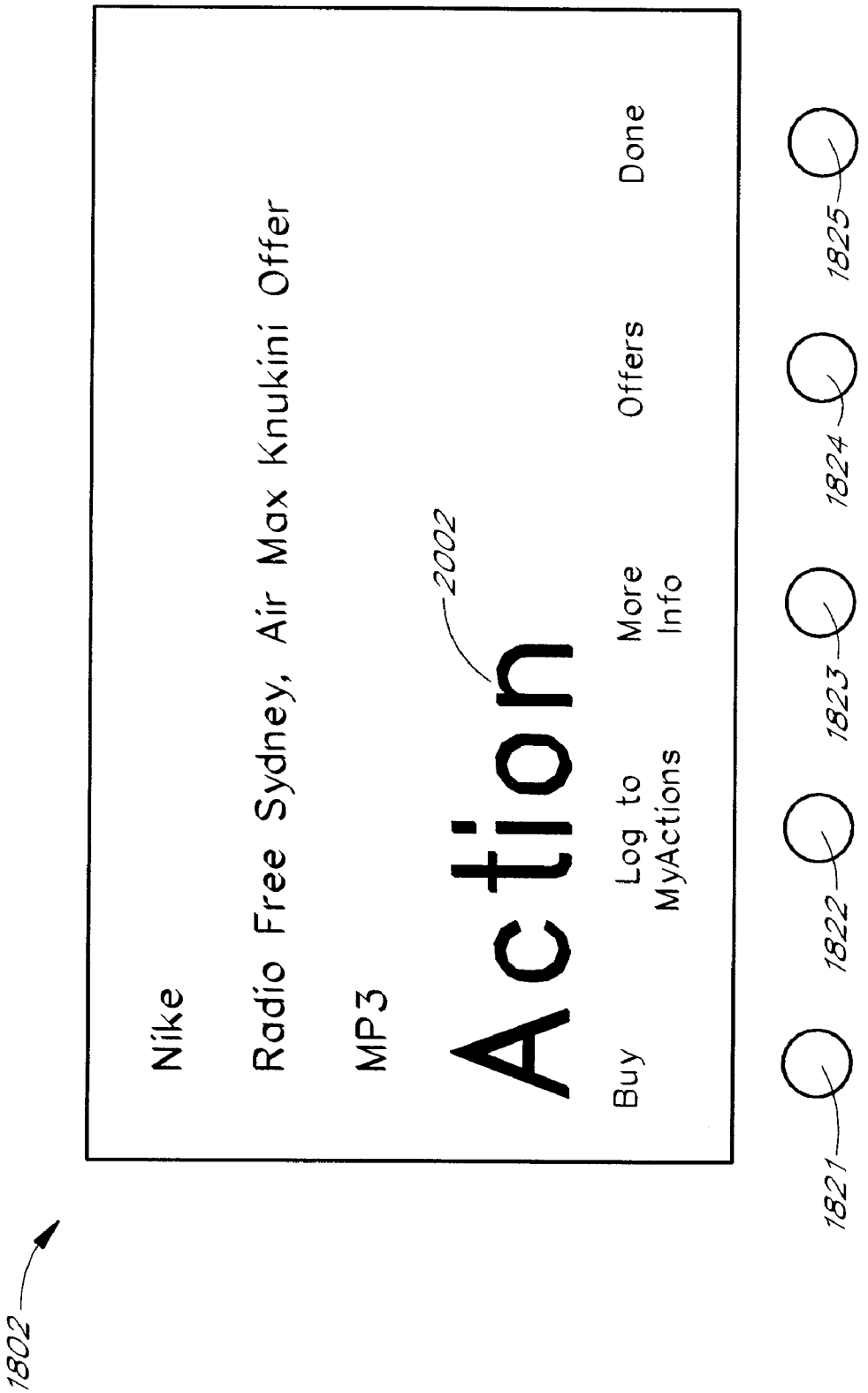

1802
Nike
Radio Free Sydney, Air Max Knukini Offer
MP3
Action
2002
Buy
Log to MyActions
More Info
Offers
Done
1821
1822
1823
1824
1825

FIG. 21

METHOD AND DEVICE FOR AN INTERNET RADIO CAPABLE OF OBTAINING PLAYLIST CONTENT FROM A CONTENT SERVER

RELATED APPLICATIONS

The present application is a continuation of U.S. patent application Ser. No. 09/805,470, filed Mar. 12, 2001, which is a continuation-in-part of U.S. patent application Ser. No. 09/096,703, filed Jun. 12, 1998, now abandoned, and which claims the benefit of U.S. Provisional Application No. 60/246,842, filed Nov. 8, 2000. U.S. patent application Ser. No. 09/096,703 also claims the benefit of U.S. Provisional Patent Application No. 60/072,127, filed Jan. 22, 1998. The disclosures of these previous applications are hereby incorporated by reference in their entireties.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to the field of audio file transfers and, more particularly, relates to the field of management and distribution of audio files over a computer network such as the Internet.

2. Description of the Related Art

The Internet is a worldwide array of interconnected computers and information servers that allow anyone with a computer and access to the Internet to get information about virtually any subject 24 hours a day. For the average consumer, an Internet Service Provider (ISP) provides access to the Internet. ISPs such as CompuServe, Prodigy, and America On-Line, currently link over ten million users to the Internet. Users typically connect to the ISP by using standard telephone lines and a telephone modem. Cable modems that allow a user to connect to the ISP over cable television lines, and satellite connections to the Internet, are also available.

The Internet provides a wealth of information from stock reports to headline news. One of the newer services provided on the Internet is a streaming audio (e.g., RealAudio and MPEG audio) service. Streaming audio services are often provided in connection with the World Wide Web (Web) and thus are often called Web radio broadcasts. With streaming audio, a user with a Personal Computer (PC), a sound card, and the necessary software can listen to audio programs from anywhere in the world. For example, Radio Prague provides daily Internet broadcasts from the Czech Republic. Listeners in the U.S. can listen to these Web radio broadcasts either in real time, or stored for later replay. Thus, unlike more traditional radio broadcasts where the listener must be within a reception area, Web radio broadcasts can be heard anywhere, so long as the listener has a connection to the Internet and the necessary computer hardware and software.

Unfortunately, even with the ever-decreasing cost of personal computers, the hardware and software needed to listen to a Web radio broadcast is beyond the financial means of many people. Even for those that can afford a personal computer, listening to a Web radio broadcast ties up the computer so that the user cannot use it for other purposes. Moreover, the use of a personal computer to receive streaming audio (e.g., Web radio broadcasts) requires a certain amount of computer literacy on the part of the user. The user must be able to install the Web Radio software, configure the Web Radio software to communicate with the ISP, and find the various Web radio broadcasts provided on the Web.

In addition to listening to Web radio broadcasts, users may wish to listen to audio files. With a group of PC's in a home and in a network, users can download songs from one PC to another or upload songs from one PC to another. However, users cannot play a song on one PC by using the controls of another PC. In addition, the users must purchase multiple PC's, which can be costly. Further, the user must be able to install the network connection and the appropriate software. Moreover, even if the user can afford to purchase multiple PC's and install the proper connection, the user would have difficulty playing music in addition to performing other tasks on the PC. For example, the Web radio broadcast may be interrupted. Also, a skip over parts of a song may result if the user is using a word processing program at the same time as listening to music.

SUMMARY OF THE INVENTION

The present invention solves these and other problems by providing a network-enabled audio device for listening to a variety of audio sources with substantially equal convenience. The network-enabled audio device has a visual display for providing audio source choices to a user. The visual display also provides functions for managing audio sources. User control buttons allow a user to choose an audio source to listen to. The menu buttons allow the user to choose functions for managing the audio sources. In one embodiment, there is also tuner circuitry for receiving radio frequency signals from radio broadcast stations. In one embodiment, a CD player allows the user to listen to CD's. In one embodiment, the network-enabled audio device also has one or more audio amplifiers and one or more loudspeakers operably connected to said audio amplifiers. In one embodiment, a modem is used for transmitting and receiving digital data over a communications network. One embodiment includes a data storage device.

A first software module is stored on the data storage device, and the software module is configured to decode compressed audio files into a playable (e.g. uncompressed) format. A second software module is also stored on the data storage device. The second software module is configured to use the modem to connect to an Internet service provider to receive assignments of playlists from a third software module. The playlists include references to audio from a variety of audio sources. The assignments provide information about the location of other web sites containing the audio sources. The second software module is configured to subsequently connect through an Internet service provider to web sites to download audio files.

A third software module is also stored on the data storage device. The third software module is configured to use the modem to connect to an Internet service provider to receive digitized audio broadcasts from the Internet service provider. The module is further configured to provide a select-broadcast display to allow the user to selectably connect a program broadcast to the input of one or more audio amplifiers either from a local AM or FM radio station or from the world wide Web so that, to the user, reception of a broadcast from the World Wide Web is no more complicated than listening to a local FM or AM radio station.

One aspect of the present invention is a network-enabled audio device that allows a user to store files, to play standard audio CD's, to play MP3 encoded CDs, to record songs from CD's, to receive digitized radio broadcasts over the World Wide Web (Web), and to receive assignments of playlists of songs from other network-enabled audio devices. The network-enabled audio device provides the hardware and software to perform those functions without the need for expensive equipment. Optionally, a Local Area Network can be configured in place of, or in addition to, the Internet connec-

tion to facilitate assignments of playlists and other features. Without an Internet connection or other network connection, the network-enabled audio device can play standard audio CD's, can play MP3 encoded CD's, and can record CD's.

The network-enabled audio device provides a display device, such as a Liquid Crystal Display (LCD) that allows the user to select playlists of music much like a jukebox. The user can compose playlists from disk files, CD's, Internet streaming audio broadcasts, online music sites, and other audio sources. In one embodiment, the user can also compose playlists from links to AM/FM broadcasts. The user can also select a desired Web broadcast from a list of available Web broadcasts. In addition, the user can play standard audio CD's and MP3 encoded CD's and have access to local AM/FM stations. Further, the software, the user controls, and the display in the network-enabled audio device are operably configured and connected such that the user can listen to playlists that include CD's and other audio sources just as the user would choose a playlist in a jukebox. Thus, the network-enabled audio device provides people who are or are not comfortable with computers a way of taking music from various sources and putting it into one place for listening pleasure. In one embodiment, the Personal Computer (PC) is used to compose the playlists, but the user is able to listen to playlists and other audio sources without using the PC.

In one embodiment, the network-enabled audio device is a low-cost tabletop box that connects to an AC power line and optionally to a phone line or to a local area network connection such as Ethernet. The device includes a display device, speakers, a control panel, a computer processor, stored software, a modem, an AM/FM tuner, and a CD player. Optionally, the device can include multiple computer processors or support computer processors. The user accesses the server site via a PC and the Internet. From the server site, the user obtains a list of the devices in his or her Internet Personal Audio Network (IPAN) and what songs are on those devices. The IPAN includes an IPAN server, an IPAN client, and IPAN software stored on the network-enabled audio device. In one embodiment, the IPAN client includes a standard web browser, an IPAN plug-in to the standard web browser, and an IPAN active tray software module. In one embodiment, any standard web browser may be used, but the IPAN client includes the IPAN plug-in and the IPAN active tray software module.

The IPAN client and the IPAN server store the name of the song and the associated Uniform Resource Locator (URL). The user can list multiple devices as being part of his or her IPAN. At a default time, such as for example 2 a.m., each device establishes a connection to an Internet Service Provider (ISP). The stored software module in each device connects to the server site home page, via the ISP, and inquires whether any songs or playlists have been assigned to the device. The user can bypass the default time for accessing the server and access the server by manually pressing one of the buttons.

In one embodiment, the network-enabled audio device has no disk for data storage space. Rather, a local area network (LAN) connection to a PC or other network-enabled audio device allows the use of disk space on another device. In one embodiment, the network-enabled audio device comprises speakers, an AC power line, and a network line. A home PC is connected to the network-enabled audio device through the network line. The network connection can be a Home Phoneline Networking Alliance (HPNA) network connection so that the connection may be done through existing phone lines in a home. Optionally, the network connection can be an Ethernet connection. Multiple network-enabled audio devices can be connected to each other and ultimately to the PC through the network line.

In one embodiment, the network-enabled audio device does not have any storage space other than memory. This embodiment provides for a low-cost system that can play songs from playlists stored on the IPAN Manager or on the PC's storage space without having to store the audio files locally.

Another aspect of the present invention is a network-enabled component audio device system for listening to a variety of audio sources with substantially equal convenience. A visual display provides audio source choices to a user. The visual display also provides menu choices for managing audio sources to the user. The user control buttons allow the user to choose an audio source to listen to. The menu buttons allow the user to choose functions for managing the audio sources. The network-enabled component audio device has a CD player for listening to compact discs. A modem is used for transmitting and receiving digital data over a communications network. In one embodiment, a data storage device is provided.

A first software module is configured to decode compressed audio files. The first software module is stored on the data storage device. A second software module is configured to use the modem to connect to an Internet service provider to receive assignments of playlists from the second software module. The playlists include titles of audio from a variety of audio sources. The assignments provide information about the location of other web sites containing the audio sources. The software module is configured to connect through the ISP to the web sites to download the audio files.

In one embodiment, the network-enabled audio device is a component hardware device for an audio system. The network-enabled audio device provides an audio output to the audio system. The audio system provides amplifiers and loudspeakers. The network-enabled audio device includes an enclosure that connects to an AC power line, a network line, and the audio system. The network line is a computer data connection, such as, for example, a telephone line, a cable line, an Ethernet line, a Token-Ring line, a twisted pair line, an infrared link, a radio frequency link, an IEEE 1394 FireWire line, etc. The network-enabled audio device includes a display device, a control panel, at least one computer processor, a stored software module, and a modem. In one embodiment, the network-enabled audio device connects to the IPAN server site.

Another aspect of the present invention is a method for assigning playlists of music from one electronic device to another. First, a network connection is used for transmitting and receiving digital data over a communication network to an Internet service provider. Next, the process provides a first software module to manage playlists of songs. The software module allows a user to compose playlists from a variety of audio sources. The software module allows a user to assign a playlist from a first device to a second device. Next, the process checks the second device's data storage space for songs listed on the assigned playlist. Next, the process accesses a server site to obtain locations of the web sites the first device downloaded its audio files from. The process then provides a second software module to connect to various web sites to download remaining songs needed for the playlist. The second software module connects if songs needed to form the playlist are not stored on the second device's data storage space. Finally, the process uploads files to the server

from the first device and downloads files the second device if the second software module is unable to download a file from said web site.

BRIEF DESCRIPTION OF THE DRAWINGS

The various novel features of the invention are illustrated in the figures listed below and described in the detailed description that follows.

FIG. **1** is a perspective view of one embodiment of a tabletop intelligent radio apparatus.

FIG. **2** is a block diagram of the functional elements of the intelligent radio apparatus.

FIG. **3**A shows a default display that appears while a Web broadcast is being received.

FIG. **3**B shows a menu display that allows the user to select one of the command and setup displays shown in FIGS. **3**C-**3**E.

FIG. **3**C illustrates a select language display that allows a user to specify desired languages (e.g., English, French, etc.).

FIG. **3**D illustrates a display that allows a user to select a type of program material (e.g., news, sports, weather, etc.).

FIG. **3**E illustrates a display that allows a user to select various program broadcasts.

FIG. **4** illustrates a data-entry display that the intelligent radio apparatus uses to allow the user to input alphanumeric text.

FIG. **5** is a flowchart that illustrates operation of the intelligent radio apparatus.

FIG. **6** is a flow graph that illustrates operation of the intelligent radio networked system.

FIG. **6**A illustrates the information management and data processing functions provided by a Web radio Web site (e.g., www.webradio.com) to produce a list of Web radio broadcast stations for the user.

FIG. **6**B illustrates a relationship between the Web radio Web site and other web sites that provide streaming audio programming.

FIG. **7** is a perspective view of a tabletop intelligent radio tuner.

FIG. **8** is a block diagram of the functional elements of the intelligent radio tuner shown in FIG. **7**.

FIG. **9** is a block diagram of the functional elements of an embodiment of the intelligent radio that provides a remote playback capability.

FIG. **10** is a block diagram of the functional elements of an embodiment of the intelligent radio that provides a remote access capability.

FIG. **11** is a perspective view of one embodiment of the computing environment of a network-enabled audio device configuration.

FIG. **12**A is a perspective front view of one embodiment of the network enabled component audio device as shown in FIG. **11** that integrates with a home stereo entertainment system.

FIG. **12**B is a perspective rear view of one embodiment of the network-enabled component audio device as shown in FIG. **11** that integrates with a home stereo entertainment system.

FIG. **13**A is a perspective front view of one embodiment of a stand alone network-enabled audio device as shown in FIG. **11**.

FIG. **13**B is a perspective rear view of one embodiment of a stand alone network-enabled audio device as shown in FIG. **11**.

FIG. **14** is a block diagram of the functional elements of the network-enabled audio device as shown in FIGS. **12**A, **12**B, **13**A, and **13**B.

FIG. **15** is a block diagram illustrating the configuration between several network-enabled audio devices and a stereo web site as shown in FIG. **11**.

FIG. **16** illustrates a process for connecting the components and setting up the software for the network-enabled audio device as shown in FIGS. **12**A, **12**B, **13**A, and **13**B.

FIG. **17**A shows a default display of the current playlists when the Internet Personal Area network (IPAN) manager software is started.

FIG. **17**B illustrates a display that allows the user to control the sound and perform other functions on the audio source.

FIG. **17**C illustrates the menus used to assign a playlist, as shown in FIG. **17**A, to another device.

FIG. **17**D illustrates the songs within a playlist and links to other devices that have the songs present on their hard disk space.

FIG. **17**E illustrates a schedule window that appears for a song (shown in FIG. **17**D) to be played at a particular time on a specific device.

FIG. **17**F illustrates the window that appears to allow the user to choose a default look and feel for the IPAN manager window, as shown in FIG. **17**A.

FIG. **17**G illustrates the window that appears to allow the user to choose other options and the look and feel for the IPAN manager window, as shown in FIG. **17**A.

FIG. **17**H illustrates the window that appears to allow the user to move audio files from one device to another device.

FIG. **17**I shows a display for allowing a user to add a device to the IPAN.

FIG. **18**A shows a default display of the network-enabled audio device, as shown in FIGS. **12**A, **12**B, **13**A, and **13**B.

FIG. **18**B shows a display for allowing a user to operate the radio functions of the network-enabled audio device, as shown in FIGS. **12**A, **12**B, **13**A, and **13**B.

FIG. **18**C shows a display for allowing a user to use preset radio stations of the network-enabled audio device, as shown in FIGS. **12**A, **12**B, **13**A, and **13**B.

FIG. **18**D shows a display for allowing a user to play a playlist stored on the network-enabled audio device, as shown in FIGS. **12**A, **12**B, **13**A, and **13**B.

FIG. **18**E shows a display for allowing a user to delete a song from a playlist stored on the network-enabled audio device, as shown in FIGS. **12**A, **12**B, **13**A, and **13**B.

FIG. **18**F shows a display allowing a user to play the songs from all the playlists stored on the network-enabled audio device as shown in FIGS. **12**A, **12**B, **13**A, and **13**B.

FIG. **18**G shows a display for allowing a user to collect information about a CD and copy a CD to the internal hard drive of the network-enabled audio device shown in FIGS. **12**A, **12**B, **13**A, and **13**B.

FIG. **18**H shows a display that allows a user to play and navigate through the audio stored on the CD.

FIG. **19**A is a flowchart showing the process for downloading audio files found when navigating the Internet.

FIG. **19**B is a flowchart showing the process for assigning playlists from one device to another.

FIG. **19**C, which comprises FIG. **19**C_1 and FIG. **19**C_2, is a flowchart of the process shown in FIG. **19**B that assigns playlists with missing songs from one device to another.

FIG. **20**A shows a default display of the network-enabled audio device before the action button has been pressed, as shown in FIGS. **12**A, **12**B, **13**A, and **13**B.

FIG. **20**B shows a display of the menu items on the network-enabled audio device after the action button has been pressed.

FIG. **20**C shows a display of the menu items on the network-enabled audio device after the "music" menu item has been chosen.

FIG. **20**D shows a display of the menu items on the network-enabled audio device after the "albums" menu item has been chosen.

FIG. **20**E shows a display of the menu items on the network-enabled audio device after the menu item representing an album has been chosen.

FIG. **20**F shows a display of the menu items on the network-enabled audio device after the "buy" menu item has been chosen.

FIG. **21** shows a display including an advertisement after the action button has been pressed on the network-enabled audio device.

In the figures, the first digit of any three-digit number generally indicates the number of the figure in which the element first appears. For example, an element with the reference number **502** first appears in FIG. **5**. Where four-digit reference numbers are used, the first two digits indicate the figure number.

DETAILED DESCRIPTION

One aspect of the present invention is an intelligent radio device that allows a user to receive digitized radio broadcasts over the World Wide Web (Web). The intelligent radio provides the hardware and software necessary to receive digitized audio from the Web without the need for a personal computer or other expensive equipment. The intelligent radio provides a display device, such as a Liquid Crystal Display (LCD) that allows the user to select a desired Web broadcast from a list of available Web broadcasts. The display also allows the user to select Web broadcasts in a particular language. The software, the user controls, and the display in the intelligent radio **100** are operably configured and connected such that a user can tune into a Web radio broadcast in a manner similar to the way a user would use the controls on a conventional radio to tune into an AM or FM radio station. Thus, the intelligent radio provides people who are not comfortable with computers, or who do not own or have access to a computer, an opportunity to listen to streaming audio information from the Internet.

In one embodiment, the intelligent radio is a low-cost tabletop box that connects to an AC power line and a phone line. The device includes a display device, speakers, a control panel, a computer processor, a stored software program, and a modem. The intelligent radio uses the modem to establish a telephone connection to an Internet Service Provider (ISP). The stored software program connects to a Web Radio home page, via the ISP, and downloads a list of Web radio station addresses. Alternatively, the user can enter a web address (e.g., a Uniform Resource Locator (URL)) to connect directly to a web page that provides audio broadcasts (instead of first connecting to the Web Radio home page). The user may use buttons on the control panel to scroll through the display and select a Web radio broadcast "station" for listening. When a station is selected, the stored software program connects to the station and begins to receive digitized audio data transmitted by the station. The intelligent radio converts the received data to analog audio and plays the audio on one or more loudspeakers.

In an alternate embodiment, the intelligent radio is a tuner that connects to an audio system such as a component stereo system. The tuner provides an audio output to the audio system. The audio system provides amplifiers and loudspeakers. The tuner comprises an enclosure that connects to an AC power line, a network line, and the audio system. The network line may be any type of computer data connection, including, for example, a telephone line, a cable line, an Ethernet line, a Token-Ring line, a twisted pair line, an infrared link, a radio frequency link, an IEEE-1394 FireWire line, etc. The tuner includes a display device, a control panel, a computer processor, a stored software program, and a modem. The intelligent radio uses the modem to establish a telephone connection to an Internet Service Provider (ISP). The stored software program connects to a Web Radio home page, usually provided by the ISP, and downloads a list of Web radio stations. A user uses use buttons on the control panel (or remote control) to scroll through the display and select a Web radio broadcast "station" for listening. Alternatively, the user may use voice-activated commands to scroll through the display. When a station is selected, the stored software program connects to the station and begins to receive digitized audio data transmitted by the station. The intelligent radio converts the received data to analog audio, which is provided to the audio system.

FIG. **1** illustrates one embodiment of a tabletop intelligent radio **100**. The intelligent radio **100** is mounted in an enclosure **101** and connects to household AC power through a power cord **104** and to a communications network by a network cable **102**. The network cable **102** may be a telephone line, a network cable, a cable TV cable, a connection to a wireless (e.g., satellite) unit, etc. For example, the communications network may use Iridium satellites developed by the Motorola Corp., Globalstar satellites developed by a consortium of European manufacturers which includes Aérospatiale and Alcatel, P21 satellites developed on a project financed by Inmarsat, or the Odyssey satellite system developed by a TRW consortium associated with Teleglobe/Canada.

User controls are mounted on the front of the enclosure **101** and include a combined on-off and volume control **110**, a command button **121**, a cursor control **116**, a select button **118**, a tuning control **114**, and a button bar **120**. The cursor control **116** provides up, down, left, and right movements of a cursor or other entity on a display device **112**. The button bar **120** provides buttons to select an audio source, including, for example, "AM" radio, "FM" radio, "Web" radio, "Cassette", and "External" input. Also mounted on the front of the enclosure **101** is the display device **112**, which provides information to the user. An optional cassette player/recorder **130** provides the capability to play and record audio cassettes. The intelligent radio **100** also includes a left stereo speaker **106** and a right stereo speaker **108** that may be mounted in the enclosure **101** or in separate enclosures. A wireless remote **135** provides remote operation of the intelligent radio **100**. In some embodiments, a microphone is provided as well. An output from the microphone is provided to an analog-to-digital converter to convert the analog microphone signal into digital data. The microphone may be placed in the intelligent radio **100**, in the wireless remote **135**, or both.

FIG. **2** is a block diagram of the functional elements of the intelligent radio **100**. The intelligent radio **100** comprises a Central Processor Unit (CPU) **202** that is used to run the intelligent radio software. The CPU **202** is connected to a random access memory **204**, a data storage device **210**, and a modem **206**. The data storage device **210** may be any type of non-volatile data storage device, including, for example, a floppy disk drive, a hard disk drive, a flash memory, a CD-ROM, a DVD-ROM, a CMOS memory with battery backup, etc. The data storage device **210** provides storage for software

programs used by the intelligent radio **100**. The software stored on the data storage device **210** may be upgraded by downloading new software from the Web. The data storage device **210** may also provide storage for digitized audio material, such as recorded Web radio broadcasts, CD-Audio, etc. The modem **206** is connected to a communications network **230**, shown as a Public Switched Telephone Network (PSTN), by the network cable **102**. Although the communications network **230** is shown as a PSTN network, one skilled in the art will recognize that the network **230** may also be a cable television (CATV) network, a satellite network, or any other communications network. In one embodiment, the network **230** comprises both a Direct TV/PC satellite connection that provides information to the intelligent radio **100** at high speed (e.g., 400,000 bytes per second or more), and a PSTN network connection so the intelligent radio can upload information back to the ISP **232** (because many Direct TV/PC connections are only one-way). In yet another embodiment, the satellite network is a two-way satellite network that uses the satellite for both download and upload. In one embodiment, the satellite network uses the Iridium™ system developed, in part, by the Motorola Corp.

Optionally, a telephone **229** is connected to a first port of a codec **260**. A second port of the codec **260** is provided to the CPU **202**. The codec **260** provides digital-to-analog conversion and analog-to-digital conversion for the telephone **229**. The codec **260** also provides standard telephone interface signals, such as a ringing signal, to the telephone **229**, and telephone status conditions, such as receiver up or receiver down, to the CPU **202**. In some embodiments, the codec **260** and the modem **206** may be combined as a telephone modem. The telephone **229** may be connected even when the network **230** is not a telephone network.

The modem **206** provides an interface between the CPU **202** and the communications network **230** and the operational characteristics of the modem **206** are determined by the type of communications network **230**. Thus, if the network **230** is a PSTN network, then a telephone modem is used; if the network **230** is a CATV network, then a cable modem is used, etc. In a preferred embodiment, the modem **206** is integral to the intelligent radio **100**. In other embodiments, the modem **206** is provided in a separate enclosure. An Internet Service Provider (ISP) **232** provides the user with a connection from the communications network **230** to the Web via the Internet **234**. Note that FIG. **2** shows functional elements, but not necessarily hardware configurations. Thus, for example, the modem **206** may be implemented in software on the CPU **202**. The CPU **202** may be a Digital Signal Processor (DSP). The CPU **202** may comprise a single computer processor, or multiple computer processors. In one embodiment, the CPU **202** comprises two processors, a DSP and a general purpose microprocessor. In one embodiment, the modem **206** is provided in a plug-in module such that the intelligent radio can be configured for different types of computer networks by simply changing the modem plug-in to suit the type of network being used.

The CPU **202** provides data to the display device **112**. The CPU **202** receives user inputs from the command button **121**, the tuning control **114**, the button bar **120**, the select button **118**, and the cursor control **116**. The CPU **202** provides digitized audio samples to an input of a Digital-to-Analog Converter (DAC) **220**. The analog audio output of the DAC **220** is provided to an amplifier **222**. In a preferred embodiment, the DAC **220** and the amplifier **222** are each two-channel devices, providing left and right stereo channels. A left channel output of the amplifier **222** is provided to the left channel speaker **106** and a right channel output of the amplifier **222** is provided to the right channel speaker **108**. The volume control **110** controls the gain of the amplifier **222**.

As shown in the preferred embodiment in FIG. **2**, the other optional audio sources such as the cassette device **130**, an AM tuner **240**, an FM tuner **242**, and an external input **244** also provide inputs to the amplifier **222**. Other optional audio sources may be provided, such as, for example, an audio CD, a DVD, a digital audio tape unit, etc. The CPU **202** controls the cassette device **130**, the AM tuner **240**, the FM tuner **242**, and other optional audio sources. A line output from the amplifier **222** may also be provided to a record input of the cassette device **130**.

As described above, the button bar **120** is used to select one of the audio sources. When the button bar **120** is set to "AM," the intelligent radio **100** operates in an AM radio mode. In the AM radio mode, an analog output from the AM tuner **240** is provided to the amplifier **222**. Also in the AM radio mode, the display device **112** displays the frequency of an AM station selected by the AM tuner **240**. The user may use the tuning control **114** to select a desired AM station. The AM mode is optional.

An analog output from a microphone **250** is provided to an analog input of an analog-to-digital converter **252**. A digital output from the analog-to-digital converter **252** is provided to the CPU **202**. The microphone **250** and converter **252** allow for voice commands to control the intelligent radio. The microphone **250** and converter **252** are optional. In some embodiments, a microphone is also placed in a wireless remote so that voice commands can be provided from the wireless remote.

When the button bar **120** is set to "FM," the intelligent radio **100** operates in an FM radio mode. In the FM radio mode, the analog audio output from the FM tuner is provided to the amplifier **222**, and the display device **112** displays the frequency of the FM station selected by the FM tuner **242**. The FM mode is also optional.

When the button bar **120** is set to "Cassette," the intelligent radio **100** operates in a cassette playback mode. In the cassette playback mode, analog output from the cassette player is provided to the amplifier **222**, and the display device **112** displays information relating to the cassette playback. The cassette playback mode is also optional. The cassette device **130** may also optionally be configured to provide a record capability such that the cassette can be used to record audio information from any of the other modes. Thus, for example, the cassette can be used to record FM radio, AM radio, or Web radio broadcasts.

When the button bar **120** is set to "Web," the intelligent radio **100** operates in a Web Radio mode. In the Web Radio mode, the intelligent radio **100** uses the modem **206** to connect to the ISP **232**. The ISP **232** provides a list of available Web broadcasts, and access to the Internet **234**, so that the various Web broadcasts can be received by the intelligent radio **100**. In the Web Radio mode, the display device **112** is used to select a Web broadcast and to provide information about the selected Web broadcast.

FIGS. **3**A through **3**E show various displays provided by the display device **112** while in the Web Radio mode. FIG. **3**A shows a default display **300** that appears while a Web broadcast is being received. FIG. **3**B shows a menu display that allows the user to select one of the command and setup displays shown in FIGS. **3**C-**3**E.

The display **300**, shown in FIG. **3**A, includes information about the Web broadcast including the type of broadcast (e.g., "Newscast"), the Web address (URL) of the source for the broadcast (e.g., http://www.npr.org), a description of the

broadcast (e.g., "National Public Radio 1997"), a broadcast format (e.g., "Streaming RealAudio"), etc.

FIG. **3**B shows a menu display **320** that allows the user to access the various setup and control displays shown in FIGS. **3**D-**3**E. The user activates the menu display **320** by pressing the command button **121**. The display **320** provides a menu list **322** that lists the various other command displays. The list **322** may provide: a "Tune Station" command for activating a tune-station display **340**, shown in FIG. **3**E; a "Select Language" command for activating a select-language display **310**, shown in FIG. **3**C; and a "Select List" command for activating a select-list display **322**, shown in FIG. **3**D. The list **322** may also provide commands to activate other displays (not shown) such as "Setup," to initialize the intelligent radio, "Scan Stations," to get a new list of Web broadcast stations from the Internet **234**, and "Define Station," to manually define a Web broadcast station not listed. The list **322** may also provide commands to activate other displays such as "Set Clock," and "Set Alarm," to provide optional clock and alarm clock modes for the display device **112**.

The display **320** also provides a scroll bar **321** to allow the user to scroll through the list **322** and select an item (command) from the list. Scrolling may be accomplished by using either the cursor control **116** or the tuning control **114**. The user uses the cursor control **116** or the tuning control **114** to highlight a desired menu item in the list **322**, and then the user presses the select button **118** to select the highlighted menu item.

The select-language display **310**, shown in FIG. **3**B, allows the user to elect to receive Web broadcasts in one or more selected languages. The display **310** provides a list of available languages **312** and a scroll bar **314** for scrolling through the list **312**. Each item in the list **312** corresponds to a language (e.g., English, French, etc.) and each item is provided with a checkbox **313**. If a checkbox **313** is checked, then the corresponding language is enabled. The display **310** also provides an OK button **315**, a Cancel button **316**, a Clear-All button **317**, and a Select-All button **318**. The Clear-All button **317** clears all of the checkboxes **313**, and the Select-All button **318** checks all of the checkboxes **313**. The user "presses" one of the buttons **315**-**318** by using the cursor control **116** to highlight a desired button and then pressing the select button **118** to "press" the highlighted button.

The select-list display **330**, shown in FIG. **3**D, allows the user to select a preferred type of program material (e.g., Sports, Weather, News, All, etc.). The display **330** includes a list **332** of program types and a scroll bar **331**. The user uses the cursor control **116** or the tuning control **114** to highlight a desired program type from the list **332**, and then the user presses the select button **118** to select the highlighted program type.

The select-broadcast display **340**, shown in FIG. **3**E, allows the user to select a Web broadcast. The display **330** includes a list **342** of the available Web broadcasts having the proper language (as selected in the select language display **310**) and the desired program type (as selected in the select-list display **331**). The user uses the cursor control **116** or the tuning control **114** to highlight a desired broadcast from the list **342**, and then the user presses the select button **118** to select the highlighted program type. Each item in the list **342** is provided with a checkbox **343**. If the checkbox **343** is checked, then the corresponding broadcast is a preferred (or "fast-tune") broadcast. The user may scroll through the fast-tune broadcasts by using the tuning control **114** from the default display **300** shown in FIG. **3**A, without having to activate the select-broadcast display **340**. This provides a convenient shortcut feature to allow the user to quickly tune to stations that the user regularly listens to.

FIG. **4** illustrates a data-entry display **450** that allows the user to input alphanumeric text (e.g., the telephone number of the ISP **232** or a URL). The display **450** includes a text prompt **451** to prompt the user for the desired data. The display also includes an on-screen keyboard **452**, a text display **453**, an OK button **454** and a Cancel button **455**. The user enters text by using the cursor control **118** to highlight a desired character on the on-screen keyboard **452** and then pressing the select button **118** to enter the highlighted character into the text display **453**. The OK button **454** and the Cancel button **455** are "pressed" in the same fashion.

FIG. **5** is a flowchart **500** that begins at a start block **501** and illustrates the Web Radio mode process. The process advances from the start block **501** to a decision block **502**, where the process checks a status flag to determine whether or not the intelligent radio software needs to be initialized (setup). If setup is needed, then the process advances to a process block **504**; otherwise, the process jumps over the setup steps to a process block **514**. In the process block **504**, the process obtains a phone number for the desired ISP **232**. The phone number may be obtained from a default phone number stored in the intelligent radio software, or by prompting the user through the data-entry display **450**. Once the phone number has been obtained, the process advances to a process block **506**, where the modem **206** dials the telephone number and establishes a modem connection with the ISP **232**. Once the connection is established, the process advances to a process block **508** where the user establishes an account with the ISP **232**.

In one embodiment, the user is prompted for a password that is stored on the data storage device **210** or entered using the data-entry display **450**. Establishing an account may include other actions, such as creating a username for the user, changing the phone number used to access the ISP **232**, and entering information about the user and the user's account. Once an account is established, the process advances to a process block **510** where a list of available Web radio broadcast stations is downloaded to the intelligent radio **100** from the ISP **232** and stored on the storage device **210**. Lists of available languages and program types are also downloaded and stored on the storage device **210**. Once the lists are downloaded, the process advances to a hang-up block **512** wherein the modem **206** terminates the network connection (e.g., hangs-up the phone). Upon hang-up, the setup process is complete, and the process advances to the process block **514**.

In the process block **514**, the modem dials the ISP **232** and then advances to a process block **516** where the intelligent radio **100** logs on to the user's account at the ISP **232**. The hang-up, redial, and logon (blocks **512**, **514**, and **516**, respectively) is desirable when using a PSTN, because the initial telephone call, placed in the block **506**, is typically a long-distance call or a toll-free (e.g., a 1-800) call. By contrast, the telephone call placed in the block **514** is typically a local call. When using a non-PSTN network (e.g., a cable modem, a satellite network, etc.) then the hang-up, redial, and logon (blocks **512**, **514**, and **516**, respectively) is typically omitted.

Once the user is logged on, the process advances to a process block **518** where the user selects (tunes) a Web radio broadcast station. Once a Web broadcast has been selected, the process advances to a process block **520** where the intelligent radio **100** receives the Web broadcast. The CPU **202** decodes and decompresses the received data as necessary and then sends the decompressed data to the DAC **220** where it is converted to an analog signal that is subsequently played on

the speakers **106**, **108**. The process remains in the process block **520** while the user listens to the Web broadcast.

If the user tunes to a new Web broadcast station (e.g., by turning the tuning control **114** or by activating the select-broadcast display **340**) then the process loops back to the process block **518**, selects the new station, and returns to the process block **520**.

FIG. **6**A illustrates the information management and data processing functions **600** provided by a Web Radio site **602** (e.g., www.webradio.com). Access to the Internet site **602** is made possible by the Internet access provided by the ISP **232**. The Internet site **602** provides a list of Web radio broadcast stations for the user and optionally other value-added services that enhance the operation of the intelligent radio **100**. For example, the Internet site **602** may provide a list of available program sources and streaming audio programming. The site **602** may also maintain user profile comprising a list of preferred Internet "broadcast stations." The site **602** also provides special download capabilities such that the user can download information and software into the intelligent radio. The site **602** also provides upload capabilities such that the user can upload information, such as preferences, etc., from the intelligent radio **100** to the site **602**. For example, the site **602** can provide a customized list of stations for each user and voicemail capability. The site **602** may provide reformatting of streaming audio data into a format better suited for the intelligent radio.

In one embodiment, the site **602** also provides Web telephone capabilities to the intelligent radio **100**, such that the user can use the intelligent radio as a telephone to talk to other users that are connected to the Internet. In one embodiment of the Web telephone, the codec **260** is used to digitize speech from a microphone in the handset of the telephone **229**. The digitized speech is sent over the network **230** to the ISP. The ISP forwards the digitized speech to a remote user. Similarly, the ISP provides digitized speech from the remote user to the intelligent radio. The intelligent radio uses the codec **260** to convert the digitized speech into analog signals that are played on the speakers **106** and **108** or a speaker in the handset of the telephone **229**.

In yet another embodiment, the intelligent radio provides voice email in connection with the site **602**. To receive email, text-to-voice software in the site **602** is used to convert email text into digitized voice data as words spoken in the user's desired language. The digitized voice data is provided to the intelligent radio where it is converted to an analog signal and played on the speakers **106** and **108** or a speaker in the handset of the telephone **229**. To receive email, the user speaks into the microphone **250** or the microphone in the handset of the telephone **229** and the spoken words are converted into digitized speech by the intelligent radio. The intelligent radio sends the digitized speech to the site **602** where it is converted into email text and then emailed to the recipient. The software to convert speech to text and text to speech is provided in the site **602** in order to minimize the cost and complexity of the intelligent radio. Alternatively, the software to convert speech to text and text to speech is provided in the intelligent radio.

In one embodiment, the site **602** also provides special formatting and markup protocols that are tailored to the intelligent radio display **112**. Most existing Internet sites are geared towards a computer or television and assume that a user has a large, high resolution, color monitor. Most existing Internet sites also assume that a user is accessing the site by using a Web browser such as Netscape Navigator™ or Microsoft Internet Explorer™. These browsers support high level protocols such as HyperText Markup Language (HTML). The display **112** may be relatively smaller, and relatively less capable than a traditional computer monitor. In some embodiments, the display **112** does not necessarily need all of the capabilities and complexity of HTML and is thus better served by information that is formatted for the display **112** and that is expressed in a markup language that is suited to the needs of the intelligent radio **100**, without the overhead and complexity of HTML.

When the user connects to the Internet site, information is passed along a first data stream to an account management block **604**. The block **604** provides account management functions relating to the user's account with the ISP **232**. The account management block passes data to a user preference block **606**, which retrieves user profile information and user preferences specified by the user. Information regarding the user preferences may be stored by the ISP **232**, or downloaded from the intelligent radio **100** as needed.

Information is also passed from the process block **602** along a second data stream to a program management block **608**. The program management block **608** accesses a language variety database **610** to determine which languages are available, and a program variety database **612** to determine which types of programs are available. The program management block **608** also accesses program sources such as live broadcasts **620**, archived broadcasts **624**, stored music **626**, and other streaming audio sources **622**.

User profile information from the user preference block **606** and program data from the program management block **608** are provided to a program list block **616**, which constructs a list of available Web programs (broadcasts) that fit the user's preferences. The list constructed in the block **616** is passed to the intelligent radio **100**.

FIG. **6**B shows the conceptual relationship between the site **602** and other Web sites that supply streaming audio information, such as a site **630**, a site **631**, and a site **632**. The Internet provides the ability to transfer data between any two of the sites **602**, **630-632**. The user connects, through the ISP **232**, to the site **602**. The site **602** provides links to the sites **630-632** through the programming lists provided by the site **602**. If the user selects a streaming audio program from one of the sites **630-632**, then the site **602** provides the necessary link to the selected site. In some embodiments, the site **602** provides the link information to the intelligent radio **100**, and the intelligent radio **100** makes a "direct" connection to the selected site. In other embodiments, the site **602** links to the selected site, receives the streaming audio data, reformats the data if desired, and then sends the streaming audio data to the intelligent radio **100**.

FIG. **7** illustrates an embodiment of an intelligent radio tuner **700**. The tuner **700** is mounted in an enclosure **701** and connects to household AC power through a power cord **104**, to a network through a network cable **102**, and to an audio system through an audio line **702**. User controls are mounted on the front of the enclosure **701** and include an on-off switch **704**, a command button **121**, a cursor control **116**, a select button **118**, and a tuning control **114**. The cursor control **116** provides up, down, left, and right movements of a cursor or other entity on a display device **112**. Also mounted on the front of the enclosure **701** is the display device **112**, which provides information to the user.

FIG. **8** is a block diagram of the functional elements of the intelligent radio configured as a tuner **700**. The tuner **700** comprises the Central Processor Unit (CPU) **202** that is used to run the intelligent radio software. The CPU **202** is connected to the random access memory **204**, the data storage device **210**, the modem **206**, and the codec **260**. The data storage device **210** may be any type of non-volatile data storage device, including, for example, a floppy disk drive, a

hard disk drive, a flash memory, a CD-ROM, a DVD-ROM, a CMOS memory with battery backup, etc. The modem **206** is connected to a communications network **230**, shown as a Public Switched Telephone Network (PSTN). Although the communications network **230** is shown as a PSTN network, one skilled in the art will recognize that the network **230** may also be a cable television (CATV) network, a satellite network, or any other communications network. The modem **206** provides an interface between the CPU **202** and the communications network **230** and the operational characteristics of the modem **206** are determined by the type of communications network **203**. Thus, if the network **230** is a PSTN network, then a telephone modem is used; and if the network **230** is a CATV network, then a cable modem is used, etc. An Internet Service Provider (ISP) **232** provides the user with a connection from the network **230** to the Web via the Internet **234**.

The CPU **202** provides data to the display device **112**. The CPU **202** receives user inputs from the command button **121**, the tuning control **114**, the select button **118**, and the cursor control **116**. The CPU **202** provides digitized audio samples to an input of a Digital-to-Analog Converter (DAC) **220**. The analog audio output of the DAC **220** is provided to the audio output **702**. In a preferred embodiment, the DAC **220** is a two-channel device, providing left and right stereo channels.

FIG. **9** is a block diagram of the functional elements of an embodiment of an intelligent radio that provides for remote playback. FIG. **9** shows a base unit **900** that is connected to the communications network **230**. The base unit **900** receives streaming audio from the Web and transmits the audio information to a remote playback unit **902**.

The base unit **900** is similar in most respects to the intelligent radio except that the amplifier **222**, the loudspeakers **106** and **108**, and the volume control **110** are not located in the base unit **900**, but rather are located in the remote playback unit **902**. In the base unit, the DAC **220**, the cassette device **130**, the AM tuner **240**, the FM tuner **242**, and the external input **244** are connected to a transmitter **904** rather than the amplifier **222**. The transmitter **904** provides a transmitted signal to a receiver **906** in the remote unit **902**. The receiver **906** provides an audio output to the amplifier **222**.

The base unit **900** receives the streaming audio information from the Internet **234** and uses a transmission carrier to retransmit the audio information to one or more remote units **902**. The transmitter **904** and the receiver **906** may use any form of communication for the transmission carrier, including radio frequency communication, infrared communication, ultrasonic communication, etc. In one embodiment, the transmitter **904** may be a low power FM (Frequency Modulation) transmitter compatible with standard FM broadcast bands, such that the remote playback unit **902** can be a standard FM transistor radio or a stereo receiver. In yet another embodiment, the transmitter **904** may be a low power AM (Amplitude Modulation) transmitter compatible with standard AM broadcast bands, such that the remote playback unit **902** can be a standard AM transistor radio or a stereo receiver.

In other embodiments, the base unit **900** may also include an amplifier **222**, loudspeakers **106** and **108**, and a volume control **110** such that the base unit **900** can provide both playback of the audio information and transmission of the audio information to the remote unit **902**.

FIG. **10** is a block diagram of the functional elements of an embodiment of an intelligent radio that provides for remote access, comprising a base unit **1002** and an intelligent radio **1000**. The base unit **1002** comprises a transceiver **1012** coupled to a modem **1011**. The modem **1011** is connected to the communications network **230**. The modem **1011** receives data from the ISP and provides the data to the transceiver **1012**, which then transmits the data to a transceiver **1010** in the intelligent radio **1000**. The transceiver **1010** transmits data from the intelligent radio **1000** to the transceiver **1012**. The transceiver **1012** provides the data from the intelligent radio **1000** to the modem **1011**, which sends the data to the ISP **232**.

The intelligent radio **1000** is similar in most respects to the intelligent radio **100** shown in FIG. **2**, with the addition of the transceiver **1010**. A data input/output port of the transceiver **1010** is provided to the processor **202** and a Radio Frequency (RF) input/output port of the transceiver **1010** is provided to an antenna. Also, in the intelligent radio **1000**, the modem **206** is optional (because network communications are handled by the transceiver **1010** rather than the modem **206**).

The transceivers **1010** and **1012** use any suitable means for communication, including, for example, optical communication, radio communication, etc. In a preferred embodiment, the transceivers **1010** and **1012** are radio transceivers that use spread-spectrum communication techniques at a frequency of approximately 2.4 GHz. The combination of the base unit **1002** and the intelligent radio **1000** provides a capability similar to that provided by a cordless telephone. The base unit **1002** can be located near a network connection point (e.g., a telephone outlet), and the intelligent radio **1000** can be conveniently placed anywhere within the range of the base unit **1002**. The two-way communication link between the transceiver **1010** and the transceiver **1012** provides a cordless connection to the network **230**.

In one embodiment, the intelligent radio, as shown in FIG. **1**, is a network-enabled audio device. FIG. **11** illustrates one embodiment of the network-enabled audio device configured for use with other electronic devices. In one embodiment, the network-enabled audio device works in conjunction with a PC. With a network connection, software on a PC can be used to assign playlists of songs to the network-enabled audio device. Further, the network-enabled audio devices can be set to turn on at a certain time and play a playlist of music. In one embodiment, songs encompass a variety of audio sources including, but not limited to, audio files containing music and/or advertisements. Optionally, the network-enabled audio devices can turn on through an Internet connection as well. The front panel, including the user controls, can be disabled in order to prevent users from turning the device off when a playlist is scheduled.

In one embodiment, the network-enabled audio device records user activity and provides that information to a server for data mining purposes. For instance, a user's composition of a playlist including songs from The Beatles can be recorded by the network-enabled audio device and sent to a server tracking the number of users composing playlists including songs from The Beatles. Tracking information can then be provided to record companies interested in selling more Beatles MP3's to gauge consumer demand. In one embodiment, a button is provided for allowing the user to turn the logging feature on or off.

In FIG. **11**, an IPAN **1100** includes an IPAN server **1104**, a PC IPAN client **1106**, a network **1102**, a device B **1108**, a device A **1110**, and user controls **1112**. The PC IPAN client **1106** connects to the IPAN Server **1104** through the network **1102** (such as the Internet). The Device **1110** represents a network-enabled audio device, which connects at a default time to the IPAN server **1104**. The user can optionally change the default time or can connect to the IPAN server **1104** at a desired time independent of the default time. The user can use the user controls **1112** on the Device **1110** to bypass the default time and connect to the server **1104** immediately. When the Device **1110** connects, the IPAN server **1104** may

have a playlist for the Device **1110**. The IPAN server **1104** downloads the playlist to the device **1110**. The IPAN server **1104** checks to see what devices have the audio files listed in the playlist. The IPAN server **1104** maintains a list of URL's from which the device **1110** received audio files listed in the playlists. In one embodiment, the list of URL's is stored in a catalog. In one embodiment, the catalog also includes other information such as, for example, a list of available audio playback devices and their settings, scheduled audio playback, and/or commands for system synchronization. The Device **1110** attempts to connect to the URL's listed as the location from which the songs located on the Device's **1108** hard drive were retrieved from. If the URL's do not work and the song exists in the IPAN **1100**, then the audio files are transferred from the Device **1108** to the Device **1110** by uploading the files from the Device **1108** the next time the Device **1108** connects. The next time the Device **1110** connects, it will download the list of files from the server. If the song does not exist in the IPAN, the Device **1110** attempts to download the song at intervals until the user deletes the song from the playlist or the song is added to the Device **1108**. In one embodiment, for example, an empty cone will appear beside the song in the playlist that could not be downloaded. The user can delete the song in order to request a cease in the attempts to download, or the user can refrain from deleting the song from the playlist in order to request that further attempts be made to download the song. A request for further attempts in downloading the song results in further iterations of Device **1110** attempting to download the song from the broken URL followed by attempts to upload the song from Device **1108** when Device **1108** connects.

FIGS. **12**A and **12**B illustrate one embodiment of a network-enabled component audio device **1200**. The device **1200** represents one embodiment of the intelligent radio **700**. FIG. **12**A illustrates a front view of the network-enabled audio device **1200**. The network-enabled audio device **1200** has user controls which are mounted on the front of an enclosure **1202** and include a power button **1204**, a shuttle control **1214**, an enter button **1216**, menu buttons **1212**, an action button **1210**, and a CD-eject button **1222**. On the shuttle control **1214**, there is a right button **1264**, a left button **1260**, an up button **1262**, and a down button **1266** for navigating through menus on the display **1230**. An infrared port **1208** is mounted on the front of the enclosure **1202** to read signals from a remote control **1250**. In one embodiment, the remote control includes buttons for volume, enter, navigation shuttle, action, power, CD eject, and five preset menu buttons. A CD player **1220** is also mounted on the front of the enclosure **1202** to play standard audio CD's or MP3 encoded CD's.

In one embodiment, the display **1230** has a menu bar to provide the user with options for listening to playlists, listening to the CD player, or listening to streaming audio. The shuttle control **1214** is used to scroll through the selections in a playlist. Each selection is highlighted as the shuttle control **1214** is pressed right **1264** or left **1260**. When the user makes a choice, the enter button **1216** is pressed to signify that choice being made. If the user chooses the playlist option, a drop down menu is displayed in the display **1230** showing the available playlists. The user then uses the shuttle control **1214** to scroll through the playlists by pressing the up button **1262** or the down button **1266**. Once the user chooses an audio source with the shuttle control **1214**, the user can navigate and play the audio with the group of menu buttons **1212**.

The group of menu buttons **1212** is context sensitive and will change function depending on the audio source. For example, in one embodiment, if the user selects the CD player **1220** as the audio source, then the first menu button in the group of menu buttons **1212** is used to play the CD while the second menu button is used to stop. In one embodiment, the bottom of the display **1230** changes according to the audio source determined by the user. If the user chooses to play CDs, a "play" icon appears above the first button in the group of menu buttons. In one embodiment, if the user chooses to listen to the AM/FM radio, a scan icon appears above the first button in the group of menu buttons **1212**.

In addition to allowing the user to play files, the network-enabled audio device allows the user to play audio CD's on the CD player **1220**. Further, the user can copy and encode songs off CD's in digital formats (known as "ripping") and compose playlists with those songs and other files and streaming audio.

The action button **1210** allows the user to request the latest news, albums, concerts and other information on artists. For example, if the user is listening to a streaming audio broadcast and does not know who the artist is, he or she can press the action button **1210** and receive information on the display **1230** identifying the artists, the name of the songs, interesting facts about the artist, etc. Optionally, the user can acquire similar information by pressing the action button when listening to a CD or a playlist. In one embodiment, the network-enabled audio device **1200** acquires this information by accessing the IPAN server **1104**. The IPAN server **1104** then accesses its own database to search for the requested information. Optionally, the database is located on at least one different server than the IPAN server **1104**. In one embodiment, if the information is not found, a sample of the song will be sent to another server to analyze the sample and report back to the IPAN server **1104** with the correct information.

FIG. **12**B illustrates a rear view of the network-enabled component audio device **1200**. The network-enabled audio device **1200** connects to household AC power through a power cord **1268**. The network-enabled audio device **1200** includes a phone jack **1250**, an Ethernet port **1252**, a line-in connector **1264** having left and right channels, a line-out connector **1262** having left and right channels, a microphone jack **1258**, a headphone jack **1260**, a TOS link **1256**, and a USB port **1254**.

In one embodiment, the phone jack **1250** can be used to either establish a modem connection to an ISP and/or to establish a LAN connection (e.g. Home Phone Network Alliance network connection). The Ethernet port **1252** can be used with an Ethernet cable to provide access to an Ethernet LAN. Optionally, the Ethernet port **1252** can be replaced or supplemented with other types of connections to communications networks. A network cable provided to the Ethernet port **1252** can be a network cable, a cable TV cable, a connection to a wireless (e.g., satellite) unit, a power line, etc. For example, the communications network uses satellites developed by the Motorola Corp., Global Star satellites developed by a consortium of European manufacturers which includes Aérospatiale and Alcatel, P21 satellites developed on a project financed by Inmarasat, or the Odyssey satellite system developed by a TRW consortium associated with Teleglobe/Canada.

In one embodiment, the network-enabled audio device **1200** provides an audio output to an associated audio system. For high-speed interaction with other audio components, the digital out TOS link **1256** (also known as "Optic S/PDIF") is used for an optical connection to provide for the transfer of raw digital streams. Files can be transferred from the network-enabled audio device **1200** without a conversion from digital to analog signals. When the audio file reaches the associated audio system, such as for example a portable MP3 player, the digital audio stream is then converted to an analog

stream within the associated audio system to enhance audio quality. The associated audio system provides for amplifiers and loudspeakers.

The line in connector **1264** is an analog line in from another device. The line out connector **1262** is an analog line out to standard left and right RCA-style connectors. The standard USB host connector **1254** allows downloading of music to portable MP3 players (in a host downloading to a slave relationship) and/or USB networking with a PC or other network-enabled audio device **1200** or **1300**.

FIGS. **13**A and **13**B illustrate one embodiment of a tabletop network-enabled audio device **1300**. FIG. **13**A illustrates a front view of the tabletop version of the network-enabled audio device **1300**. As described in more detail below, the network-enabled audio device **1300** is similar to the network enabled audio device **1200** with the addition of extra features such as a radio, amplifier, and speakers. The network-enabled audio device **1300** has user controls which are mounted on the front of the enclosure **1302** and includes the power button **1204**, the shuttle control **1214**, the enter button **1216**, the menu buttons **1212**, the action button **1210**, the volume control **1316**, and a CD eject button **1222**. The shuttle control **1214** includes the right button **1264**, the left button **1260**, the up button **1262**, and the down button **1266** for navigating through menus on the display **1230**. The infrared port **1208** is mounted on the front of the enclosure **1302** to read signals from the remote control **1250**. In one embodiment, the remote control includes buttons for volume, enter, navigation shuttle, action, power, CD eject, and five pre-set menu buttons. The CD player **1220** is also provided on the device **1300** to play standard audio CD's or MP3 encoded CD's. A right speaker **1303** and a left speaker **1303** are operably connected to the network-enabled audio device **1300**.

In one embodiment, the group of menu buttons **1212** perform the same or similar functions as the group of menu buttons **1212** in the network-enabled component audio device **1200** illustrated in FIG. **12** except that the display **1230** will illustrate an additional option of playing an AM/FM radio. Therefore, when the shuttle control **1214** is used to select the AM/FM radio audio source and the user presses the enter button **1216**, the icons that reflect functions such as tuning, scanning, and other buttons used to navigate and manage an AM/FM audio source appear. If the user chooses to listen to the AM/FM radio, a scan icon appears above the first menu button **1212**.

FIG. **13**B illustrates a rear view of the tabletop network-enabled audio device **1300**. The network-enabled audio device **1300** connects to household AC power through the power cord **1268**. The network-enabled audio device includes the phone jack **1250**, the Ethernet port **1252**, the line-in connector **1264** having left and right channels, the line-out connector **1262** having right and left channels, the microphone jack **1258**, the headphone jack **1260**, an AM/FM antenna port **1390**, left and right speaker outputs **1392**, and the USB port **1254**.

In one embodiment, the network-enabled audio device **1300** has an AM/FM antenna port for connecting to an AM/FM antenna. The network enabled audio device **1300** includes an amplifier and loudspeakers **1303** (as will be described in FIG. **14**) which connect to the left and right speaker outputs **1350**.

FIG. **14** is a block diagram of the functional elements of the network-enabled audio devices **1200** and **1300**. The network-enabled audio device **1300** typically includes the functional elements of the network-enabled audio device **1200**. The network-enabled component audio device system **1300** includes an AM Tuner **1418**, an FM tuner **1420**, an amplifier **1422**, and the speakers **1303**. In one embodiment, the network-enabled audio device **1200** does not include the AM tuner **1418**, the FM tuner **1420**, the amplifier **1422**, or the speakers **1303**. A Central Processing Unit (CPU) **1402** and a CPU Support Chip **1406** are used to run the software on the network-enabled audio devices **1200** and **1300**. In one embodiment, the CPU **1402** is a StrongARM SA-1110 manufactured by Intel, and the CPU Support Chip **1406** is a StrongARM SA-1111 manufactured by Intel. The network-enabled audio device **1200** includes a display **1408**, a modem **1410**, a memory card **1412**, a data storage device **1414**, a codec **1416**, a CD player, a DAC **1470**, a microphone **1480**, a line-in port **1482**, and a line out **1484**. Further, the network-enabled audio device **1200** includes user controls, including a shuttle control **1214**, a group of menu buttons **1212**, an enter button **1204**, and an action button **1210**. The network-enabled audio device **1200** connects externally to a network **1428**. The network **1428** is shown as a Public Switched Telephone Network (PSTN) **1428** that connects to an ISP **1429** which gives access to the Internet **1102**. Through the Internet **1102**, a user can access the server site **1104** and thereby access the server site IPAN software **1433**.

In one embodiment the CPU **1402** communicates with the random access memory **1412**, the telephone modem **1410**, and the display **1408**. The memory **1412** can be flash memory or a combination of flash memory and other types of memory. The memory **1412** can be volatile or non-volatile or a combination of volatile and non-volatile. The modem **1410** is connected to a communications network **1428**, shown as a PSTN **1428**. In one embodiment, the modem **1410** is also connected to an HPNA network. Although the communications network **1428** is shown as a PSTN network, one skilled in the art will recognize that the network **1428** can also be a cable television (CATV) network, a satellite network, or any other communications network. In one embodiment, the network **1428** comprises both a Direct TV/PC satellite connection that provides information to the network-enabled audio device at high speed (e.g., 400,000 bytes per second or more), and a PSTN **1428** network connection so the intelligent radio can upload information back to the ISP **1429** (because many Direct TV/PC connections are only one-way). In yet another embodiment, the satellite network is a two-way satellite network that uses the satellite for both download and upload.

A port of the codec **1416** is provided to the CPU Support Chip **1406**. In one embodiment, the codec is a Cirrus CS4299 audio codec. The codec **1416** provides analog-to-digital conversion for the microphone **1480** and for the line in **1482**, and digital-to-analog conversion for the line out **1484**. In some embodiments, the codec **1416** and the modem **1430** are combined as a telephone modem.

The modem **1410** provides an interface between the CPU **1402** and the communications network **1428** and the operational characteristics of the modem **1410** are determined by the type of communications network **1428**. Thus, if the network **1428** is a PSTN network, then a telephone modem is used; if the network **1428** is a CATV network, then a cable modem is used, etc. In a preferred embodiment, the modem **1430** is integral to the network-enabled audio device. An Internet Service Provider (ISP) **1429** provides the user with a connection from the communications network **1428** to the Web via the Internet **1430**. The server site **1104** can then be accessed, and the server site IPAN software **1433** can be used by the user to manage audio sources and devices. Note that FIG. **14** shows functional elements, but not necessarily hardware configurations. Thus, for example, the modem **1410** can be implemented in software on the CPU **1402** or even on the CPU Support Chip **1406**. The CPU **1402** is a single computer

processor, or multiple computer processors. In one embodiment, the CPU **1402** comprises two processors, a Digital Signal Processor (DSP) and a general purpose microprocessor. In one embodiment, the modem **1410** is provided in a plug-in module such that the intelligent radio can be configured for different types of computer networks by simply changing the modem plug-in to suit the type of network being used.

Optionally, the microphone **1480** is connected to a second port of the codec **1416**. An analog output from the microphone **1480** is provided to the codec **1416**. A digital output from the codec **1416** is provided to the CPU **1402**. The microphone **1480** allows for voice commands to control the network-enabled audio device. The microphone **1416** is optional. In one embodiment, a microphone (not shown) is also placed in a wireless remote so that voice commands can be provided from the wireless remote. Optionally, headphones can also be used.

The CPU **1402** provides data to the display device **1408**. The CPU **1402** receives user inputs from the shuttle control **1214**, the group of menu buttons **1212**, the enter button **1202**, and the action button **1210**.

A system bus interface interconnects the CPU **1402** to the CPU Support Chip **1406**. In one embodiment, the CPU Support Chip provides digitized audio samples to an input of the Digital-to-Analog Converter (DAC) **1470**. The analog audio output of the DAC **1470** is provided to the amplifier **1422**. In one embodiment, the DAC **1470** and the amplifier **1422** are each two-channel devices, providing left and right stereo channels. Channel outputs of the amplifier **1422** are provided to the speakers **1303**. The volume control controls the gain of the amplifier **1422**. In one embodiment, the amplifier and speakers are part of an external stereo system.

The CPU support chip **1406** is also operably connected to a CD player **1426** which outputs audio to the amplifier **1422** or an external amplification system. The CPU Support Chip **1406** or optionally the CPU **1402** also maintains software for managing the transfer of audio files from CD's to the network-enabled audio device's hard drive.

FIG. **15** illustrates a configuration for assigning playlists and audio sources to a network-enabled audio device **1510** or other devices such as a PC **1508** from a network-enabled audio device **1520** or another device. Each network-enabled audio device **1510** has a storage space **1512** for network-enabled audio device IPAN software **1526**, a playlist **1528**, and associated URL's and songs within the playlist. Similarly, each network-enabled audio device **1520** has a storage space **1522** for network-enabled audio device IPAN software **1526**, a playlist **1528**, and associated URL's and songs within the playlist. Each client PC **1508** has a storage space **1524** for client IPAN software **1532**, a playlist **1534**, and associated URL's and songs within the playlist. The server site **1104** includes server site IPAN software **1433**, the playlist **1528** stored on the storage space **1522** of device **1510**, the playlist **1530** stored on the storage space **1524** of the client PC **1508**, and the playlist **1530** stored on the storage space **1522** of the device **1520**. A storage space **1506** is provided to the server site **1104** for use in uploading and downloading audio files when URL's are broken. Storage space **1506** for the server site IPAN **1104** and other software programs can be stored externally or locally at the site.

Each network enabled audio device **1510** has storage space **1512** for a playlist **1528**, which is a list of audio files and associated URL's of where the audio files were retrieved from. Optionally, the associated URL's can be archived for only file formats that are streaming audio or MP3. Multiple playlists can be stored on the storage space **1512**. In addition to the playlist **1528**, the actual audio files listed in the playlist are also stored in the storage space **1512**. The audio files can be streaming audio, Windows Media Audio (WMA), and other audio formats. The network enabled audio device **1520** performs the same functions as the network enabled audio device **1510** with the storage space **1522**, the playlist **1530**, the network-enabled audio device IPAN software **1526**, and songs and associated URL's.

The PC client **1508** has a storage space **1524** for a playlist **1534** and associated URL's and songs in the playlist. PC IPAN client software **1532** is also stored on the storage space **1524**. The PC client **1508** includes a web browser (e.g., Microsoft Explorer, Netscape Navigator, etc.), an IPAN plug-in to the web browser, and an IPAN active tray software module.

The IPAN plug-in opens as soon as the web browser is opened. The IPAN plug-in affects the handling of links to MP3 files, streaming audio, and any other audio file type designated. Whenever a user selects, saves, or opens a file in the web browser, the IPAN plug-in intercepts the normal processing of the web browser and will check to see if the file is an audio file. If the file is an audio file, the IPAN plug-in will allow the user to download the audio file to the IPAN **1100** now or to schedule the file for download at a later time. In either case, the URL can be added to the playlist. Further, the IPAN plug-in will periodically connect to the server site IPAN software **1433** to receive software upgrades or to upload updates of the audio files present on the client PC **1433**.

The web browser can be used to connect to the server site **1104** and provide access to the server site IPAN software **1433**. The IPAN active tray software module runs in the background when the PC client **1508** is turned on. Without the web browser being opened, the IPAN active tray software module can play audio files in playlists.

At the server site **1104**, the user can access the server site IPAN software **1433** through a network connection to the server site IPAN **1104** and from the server site IPAN software **1433** the user can assign playlists to different devices such as the network-enabled audio device **1510**, the network-enabled audio device **1520**, or the client PC **1508**. The user composes the playlists from the server site IPAN software **1433**, but typically only stores the title of the song and the URL from which the song came. The playlists stored throughout the IPAN **1100** are also stored in the server site IPAN **1433**. The user then has a master list of where all playlists are located. When the device **1510** connects to the server site IPAN **1104**, a playlist is assigned to it. Within the playlist, the URL's indicate the location from which the audio files associated with the song titles in the playlist can be downloaded. The network-enabled audio device **1510** then proceeds to download the song from the given site specified by the URL to the disk space **1512** on the device **1510**. If the site at the URL is not working, the server site IPAN software **1433** will upload the playlist from the disk space **1522** of another device **1520** the next time the second device **1520** connects to the network. The next time the original device **1510** calls in, it will download the playlist from the server site **1104**.

Further, the server downloads software upgrades, if necessary, when the device accesses the IPAN **1433**. For example, if the disk space in a device that was supposed to have a playlist was accidentally erased, then the server site **1104** provides the URL's for sites to download the lost playlists. In addition, the server site **1104** downloads any other software used to enhance the communications between the server and the device. Software can also be downloaded to be used by the CPU **1402** or the Support Chip CPU **1406**.

In one embodiment, there is no server site **1104**. The PC IPAN client software **1532** stores the playlists that are located throughout the IPAN **1100**. Through a network connection, the PC IPAN client software assigns playlists to devices **1510** and **1520**.

FIG. **16** illustrates the connection steps used when the user first sets up the network-enabled audio device. A user begins at process block **1601** by connecting the speakers and radio antennas to the back of the unit. The user also takes other preparatory measures such as plugging in the AC power cord and connecting a phone cable to a telephone jack. At the next process block **1602**, the user can choose to begin listening to preloaded music without setting up any of the software by pressing the power button **1204** on the machine and pressing the "Listen Now/Setup Later" button on the first screen. The user can thus listen to preloaded music before even setting up the software for the network-enabled audio device. The process then advances to the next process block **1603** where the user can scroll through the playlists of preloaded music by using the shuttle control **1214** and the enter button **1216**. At the next process block **1605**, the user begins to set up the network-enabled audio device **1200** by inserting a setup CD into the CD player **1220**. The process advances to process block **1606** where the user returns to the first screen and selects "Setup Now" in order to begin loading the PC IPAN client software **1532** on the network-enabled audio device **1200**.

FIGS. **17**A through **17**I show various displays provided by the PC IPAN client software **1532** and the server site IPAN software **1433**. In one embodiment, these displays are produced by web pages provided by the server and display on the user's PC in a web browser. FIG. **17**A illustrates a Playlist Manager window **1700** that appears when a user runs the PC IPAN client software **1532** and the server site IPAN software **1433**. The user-control buttons in the Playlist Manager window include a client feature control button **1702**, an audio player window button **1704**, a create new playlist button **1706**, a delete button **1708**, a schedule button **1710**, a play button **1712**, a scan hard drive button **1714**, an add device button **1716**, and a synchronize button **1718**. Personal Audio Information Tabs **1726** allow the user to view classifications for audio such as by artist or playlist. The display playlist and song button **1740** provides access to audio and devices such as PC's, network-enabled audio devices **1200** and **1300**, portable audio devices, etc. Access is provided as a tree control in the playlist window **1780**. The playlist window **1780** displays playlists, the title window **1720** displays songs in the playlist, an arrow button **1760** provides for addition of songs to playlists, and an arrow button **1799** provides for deletion of songs from playlists.

The Client Feature control button **1702** allows the user to select a desired playlist or other audio source to listen to. The client feature control button also allows the user to control the look and feel of the window such as color and background designs ("skins") etc. The user clicks the play button **1712** to play a selection. To control the volume, shuffle, repeat, and other playback functions, the user clicks the audio player window button **1704**. A new popup window appears with buttons for each of those functions. In addition to choosing a playlist, the user can compose a new playlist. The user clicks the new playlist button **1706** to create a new playlist by artist, album, or genre. The user can scan the PC's hard drive for music to incorporate into a playlist by clicking the scan button **1714**. The user can also add a device to the IPAN **1433** by clicking the add device button **1716**.

To help manage playlists and devices, the Playlist Manager **1700** provides personal audio information tabs **1726**. The devices that can be managed include network-enabled audio devices **1200** and **1300**, PC's, portable MP3 players, cell phones, etc. With the personal audio information tabs **1726**, the user can view and manage the devices, playlists, and audio classifications by "All," "Playlist," "Album," "Artist," "Genre," "Books," or "Clips." The playlist window **1780** lists the playlists selected by the personal audio information tabs **1726**. The title window **1720** lists the songs in a playlist selected in the playlist window **1780**. Songs are added to a playlist listed in the playlist window **1780** using the arrow button **1760** and removed from a playlist listed in the playlist window **1780** using the arrow button **1799**. The user deletes audio files from the IPAN **1100** by selecting the file and pressing the delete button **1708**. Further, the user can schedule playlists or streams to be heard at designated devices and at designated times by using the schedule button **1710**. The user can synchronize with the server site IPAN **1433** by clicking the synchronize button **1718**. Playlists are stored on the server site IPAN **1433** in addition to the PC IPAN client **1508** or device **1510**. In other words, a playlist may have been updated at the server site IPAN **1433** by adding or deleting some songs in the playlist. The user can choose to have the same playlist with two different songs at the server site **1104** and on the device **1200** or **1300**. But, if the user made the playlist at the server site IPAN **1433**, the user presses the synchronize button **1718** so that the next time the device **1200** or **1300** connects, an updated playlist will be downloaded. To access a playlist or the playlists on a particular device, the user clicks the display button **1740**.

FIG. **17**B illustrates the display of an audio player window **1792** that includes a previous track button **1782**, a play button **1784**, a stop button **1786**, and a next track button **1790**. The audio player window **1792** is invoked by pressing the audio player window button **1704**. A volume indicator **1794** displays the current volume. The user can click on the volume indicator **1794** to drag it higher or lower to a different volume. The user can click the shuffle button **1796** to "randomize" the playlist as opposed to playing the playlist in the same order. Further, the user can press the repeat button **1798** in order to have continuous play as opposed to the playlist stopping when it runs out of songs to play. The playlists will typically start from the beginning.

FIG. **17**C illustrates the display of the audio player window **1700** showing popup menus that appear when the user attempts to assign a highlighted playlist to another device. After the user highlights a song, the user can right-click on the song in order to have a popup menu **1761** appear with a variety of options such as "Load," "Play," "Blast To," "Copy To," "Make Available On," and "Delete." The user can choose the menu option of "Make Available On" to assign the playlist from one device to another, (e.g. from device **1510** to device **1520**). The addition of the device **1510**, the device **1520**, a portable player, a PC, etc. to the IPAN **1100** will be discussed with reference to FIG. **17**I. Once the "Make Available On" option is chosen, another window **1762** appears with options of devices for the playlist to be assigned to. In FIG. **17**C, the playlist is assigned to "Living Room iRad-S" instead of "Office Desktop computer," "Portable Player," or "Home Desktop Computer."

FIG. **17**D illustrates one embodiment of how the list of songs in a playlist is displayed. A speaker icon **1762** is used to indicate a local audio file. In other words, the audio file is located on some storage space within one of the devices (e.g., a network enabled audio device **1200** or **1300**, a PC, a portable player, etc.). A speaker outline icon **1763** indicates a link to an audio file located elsewhere on another device within the

IPAN **1100**. The link can be clicked in order to see what other devices, if any, the file is located on.

FIG. **17**E illustrates a scheduling window **1763** that opens in response to the pressing the schedule button **1710**. The user can schedule playlists to be played at a particular time and on a particular device. The network-enabled audio device will automatically turn on at the scheduled time and play the given playlist. The user controls can be disabled in order to prevent a user at a remote location from changing the music scheduled to be played at the given time. Optionally, the user controls can be disabled in order to prevent the network-enabled audio device from being turned off. The scheduling window **1763** allows a user to highlight dates on a calendar and choose devices from menus to be played at a specific time. The user can also choose to interactively play the selected playlist on a day of the week at a particular time. For example, the user can choose to have a selected playlist played every Monday, Tuesday, Wednesday, Thursday, and Friday at 6 p.m.

FIG. **17**F illustrates a popup menu for selecting the default look and feel ("skin") of the IPAN client **1508**. The user accesses the "skin" option by pressing the client feature control button **1702** and the client feature control menu **1764** appears. After the user selects "skin" from the client feature control menu **1764**, a "skin" menu **1765** appears to provide different "skin" options such as, for example, "Default," "Executive," "Space," "Sixties," and "Post Industrial." FIG. **17**G shows that the "skin" menu **1765** also provides a "Get More Skins" option to allow the user to see other "skins" besides the ones listed in the "skin" window **1765**.

FIG. **17**H shows how the user can choose to "blast" a playlist of the existing audio files from a device, such as a portable player, and replace them with a new playlist in one easy process. In other words, the user can delete the existing audio files from a playlist without deleting the playlist name and substitute new audio files for the old audio files. After the user selects a song, the user right-clicks on the song to open a window **1766** with the option "Blast To." When the "Blast to" menu item is selected, a popup menu **1767** appears to provide the user with a list of devices that the music can be "Blasted" to. Devices such as the network-enabled audio devices **1200** and **1300**, PC's, portable players, etc. can be "Blasted" to.

FIG. **17**I illustrates a pop up window **1779** for adding a device to the IPAN. A plurality of fields **1771**-**1774** and a plurality of fields **1775**-**1778** are provided to allow the user to enter information concerning the new device to be added. The user enters the name of the new device to be added in the field **1771**; the serial number of the device in the field **1772**; the device type of the new device in the field **1773**, the connection point in the field **1774**; the time to automatically download to the new device in the field **1775**; the maximum time for download duration in the field **1776**, and a folder for receiving files in the field **1778**. In addition an OK button **1791** and a Cancel button **1792** are provided. Finally, there is a download box **1793** that is checked to have new files and updates automatically downloaded to the device when it is connected to the IPAN **1100**. A device can become a dedicated MP3 server by downloading files to the device every time an audio file is downloaded to any other device.

The user selects the type of device in the field **1773** from a list of devices supported by the IPAN **1100**. The user may have more than one type of device in the IPAN **1100**. Therefore, the user can enter a name in the field **1771** and the serial number in the field **1772** to distinguish similar devices. If the user designates a portable device, the device which the portable device will be connected to is entered in the field **1774** to provide the IPAN with information about how to access the portable device. The download time is entered in the field **1775** to provide the IPAN with the time when the user would like the device to automatically download. The default time is set to early morning (e.g. between midnight and 5 a.m.) because that is the time when the least amount of people are on the telephone and the Internet. The download duration is entered into the field **1776** to provide a maximum time limit for download duration if desired. The default is unlimited, but the user can set a maximum time so that if the download is not finished within the time limit, the device signs off. Before signing off, the current task will be completed. In other words, if the maximum time is exceeded in the middle of downloading the third song in a download of ten songs, the task of downloading the third song will be completed. The download will continue where it left off upon initiation of the next download command. In the previous example, the download will continue at the fourth song. Finally, the server site IPAN software **1433** will automatically install downloaded files in a designated folder unless the user specifies a different location in the field **1778**.

FIGS. **18**A through **18**H illustrate the use of the display **1800** on the network-enabled audio device. In FIG. **18**A, the screen display **1802** includes a "Radio" menu item **1804**, a "Playlist" menu item **1806**, a "Favorites" menu item **1808**, a "Jukebox" menu item **1810**, a "CD" menu item **1812**, and an "Internet Radio" menu item **1814**. Residing in the lower portion of the display **1800**, the menu buttons **1821**-**1825** are in the group of menu buttons **1212** and are provided to correspond to icons **1841**-**1845** residing in the lower portion of the display **1800**. Each one of the icons **1841**-**1845** represents a different function to be performed with respect to a selected audio source.

The user selects items from the screen display **1802** by using the shuttle control **1214** and the enter button **1216**. For example, to select the "CD" audio source, the user presses right shuttle control **1264** until the "CD" menu item is highlighted. The user then presses the enter button **1216**. Once an audio source is selected, context sensitive icons **1841**-**1845** appear above the corresponding menu buttons **1821**-**1825**. Depending on the chosen audio source, the icons **1841**-**1845** represent different functions.

FIG. **18**B illustrates the screen display **1802** when the audio source is an AM/FM radio, such as the AM/FM "Radio" menu item **1804**. The menu item **1804** is highlighted to indicate that the AM/FM "Radio" audio source has been chosen. The menu buttons **1821**-**1825** change context to correspond to icons that represent functions related to the audio source selected. Because the AM/FM "Radio" audio source was selected, the menu buttons **1821**-**1825** change context to correspond to the icons for an AM/FM tuner. The icons **1841**-**1845** shown as, respectively, a play icon **1841** corresponding to a play function **1830**, a scan next icon **1842** corresponding to a scan next function **1832**, a scan previous icon **1843** corresponding to a scan next function **1834**, a radio presets icon **1844** corresponding to a radio presets function **1836**, and a stop icon **1845** corresponding to a stop function **1838**. As further illustrated in FIG. **18**C, if the menu button **1823** corresponding to the icon **1844** representing the radio presets function **1836** is pressed, the menu buttons **1821**-**1825** change context to correspond to icons **1841**-**1845** which represent the choice of preset stations with each of the functions **1870**-**1874** corresponding to a different radio station. In one embodiment, the radio source menu option **1804** is omitted.

FIG. **18**D shows the screen display **1802** after the user has selected the Playlist menu item **1806**. The menu buttons **1821**-**1825** are used to select from various playlist icons **1841**-**1845**. The icons **1841**-**1845** shown as, respectively, a play icon **1841** corresponding to a play function **1875**, a

record icon **1842** corresponding to a record function **1876**, an export icon **1843** corresponding to an export function **1877**, and back to previous menu icon **1845** corresponding to a back to previous menu function **1878**. The shuttle control **1214** and the enter button **1216** are used to select a song from the playlist in order to play. The record function **1876** will record a playlist to the network-enabled audio device's storage device **1510**. The export mode downloads the playlist to a portable player. After a song is chosen from a playlist in FIG. **18**D, FIG. **18**E shows the menu buttons **1821** and **1822** changing context to correspond to icons **1840** and **1841**. The icons **1841** and **1842** are shown as, respectively, a delete icon **1841** corresponding to a delete function **1848** and a back to previous menu icon **1850** corresponding to a back to previous menu function **1850**.

FIG. **18**F illustrates the Jukebox audio source **1810**, which provides a listing of all the audio files stored on the hard drive **1512** of the network enabled audio device **1510** by Title, Artist, Album or Genre. The menu buttons **1821** and **1822** change contexts to correspond go icons **1840** and **1841**. The icons **1841** and **1842** are shown as, respectively, a play icon **1849** corresponding to a play function **1849** and a back to previous menu icon **1851** corresponding to a back to previous menu function **1851**.

FIG. **18**G illustrates the CD audio source **1812** being selected. The menu buttons **1821-1823** change context to correspond to icons **1841-1843**. The icons **1841-1843** are shown as, respectively, a Name CD icon **1841** corresponding to a Name CD function **1852**, a Record CD icon **1842** corresponding to a Record CD function **1854**, and a back to previous menu icon **1843** corresponding to a back to previous menu function **1856**. The Record CD function **1854** can be used to copy tracks from a CD to the hard drive **1512** for future use in playlists. The Name CD function **1852** is used to retrieve a title name for a track and other information via the Internet from a CD database site after the Record CD function **1854** has been used to copy the CD to the hard drive. In one embodiment, an online database is checked via the Internet.

In FIG. **18**H, when the CD player is being played, menu buttons **1821-1825** change context to correspond to icons **1841-1844**. The icons **1841-1845** are shown as, respectively, a previous track icon **1841** corresponding to a previous track function **1892**, a pause icon **1842** corresponding to a pause function **1894**, a next track icon **1843** corresponding to a next track function **1896**, and a stop icon **1844** corresponding to a stop play function **1898**.

FIG. **19**A is a flowchart that illustrates an audio query process **1900** of the IPAN **1100**. The audio query process **1900** begins at start block **1940** where the PC IPAN client software **1532** is opened. In one embodiment, a portion of the PC IPAN client software **1532** is part of the "active tray" so that when a user turns the PC **1508** on, the PC IPAN client software **1532** is opened. Further, a portion of the PC IPAN client software **1532** is part of the IPAN plug-in so that when an Internet or other network connection is established, the PC IPAN client software **1532** runs in the background to query whether to add an audio file found on the Internet to the server site IPAN **1104**. The process advances to a process block **1942** where the user finds a desired audio file as addressed by a URL. The user can search the Internet for audio without having to access the web site associated with the server site **1502**. In a decision block **1944**, the user is asked, through a menu, if the file is to be downloaded. If the process advances to a process block **1948**, the user has decided to download the file now and the playlist is added to the IPAN **1100**. At a process block **1950**, the file has been downloaded and is available for playing. If the user decides "NO" (i.e. to download the file at a later time or at the default time) the process advances to a process block **1946** to download the file at that default or more convenient time. The process then advances to a process block **1948** when the file is added to the IPAN **1100**. The web site associated with the server site **1104** does not have to be opened. The PC IPAN client software **1532** will download the software to the hard drive of the PC **1508** and connect to the web site associated with the server site **1508** to upload the audio files. At the final process block **1950**, the audio files will be available for playing.

FIG. **19**B is a flowchart **1900** that begins at start block **1902** and illustrates the assignment of playlists to devices. The process advances from the start block **1902** to a process block **1904** where the user logs into the server site IPAN **1433**. The process advances to the next process block **1908** where the user assigns a playlist to a first device **1510**. In one embodiment, the playlist is stored in an SQL database and accessed via active server pages. After the active server pages access the SQL database, the playlist is downloaded to the first device **1510**. The process then advances to a decision block **1908** where the process checks to see if all the songs in the playlist are stored in the first device's hard drive **1512**. If all the songs in the playlist are already on the first device **1510**, the songs on device **1510** are catalogued as being present. If songs need to be downloaded, the server site IPAN **1433** forms a list of remaining songs. In the next process block **1910**, the server site IPAN **1433** compares the list of remaining songs to its records of the songs present on the device **1520** to see if the device **1520** has some of the necessary songs to complete the playlist formation. If the second device **1520** does have some of the remaining songs, the URLs of those songs, which are stored on the Server site IPAN, are provided to the first device **1510**. The remaining songs which the second device **1520** does not have are deleted from the list of remaining songs and do not become part of the playlist. In the next process block **1914**, the first device **1510** will download the songs from the URLs provided to it by server site IPAN **1433**. The first device **1510** downloads all of the remaining songs needed for the playlist from the second device's **1520** URL's, but if all the songs are not on the second device's **1520** playlist, the first device **1510** will either get them from another device or in the worst case compose a playlist from only the songs that could be retrieved.

In the decision block **1916**, the process determines if any URLs are broken. If A is unable to download the files from the URLs, the server site IPAN **1433** will upload the files to the server site in process block **1920**, store the files in the interim, and download the files to the first device **1510** in process block **1922** the next time the first device **1510** calls in. For instance, the first device **1510** can be located on the east coast, and the second device **1520** can be located on the west coast. The first device **1510** may be assigned a playlist that is stored on the disk drive **1522** of the second device **1520**. When the first device connects (e.g., at 2 a.m.) to the server site IPAN **1433**, the first device will receive the URL's for the location where the second device **1520** downloaded the audio files and now the first device **1510** can download the audio files. If the URLs are broken, the first device **1510** will disconnect. When the second device **1520** calls in three hours later at 2 a.m. Pacific Time, the server site IPAN **1433** will upload the audio files to the server site **1104** and store the files on the disk space **1506**. When the first device **1510** connects at 2 a.m. the following evening, the audio files will be ready to download from the server site **1104** to the first device **1510**. The audio files will finally be stored on the disk space **1512**.

At process block **1922**, the songs that are present on the device **1510**'s storage space, the songs that have been down-

loaded from URL's to the device **1510**, and the songs that have been uploaded to the device **1520** are catalogued in the IPAN **1100**. In one embodiment, the songs are catalogued in the IPAN **1100** at the time that they are found. For instance, the songs that are on the device **1510**'s hard drive found at the process block **1908** can be catalogued in the IPAN **1100** at that time rather than at process block **1922**. Further, the songs downloaded from URL's can be catalogued at process block **1916** or decision block **1916**. Finally, the songs uploaded from the device **1520** can be catalogued at the time of uploading at process block **1918** or at the time of downloading at process block **1920**. Optionally, delays in cataloguing can be used. In one embodiment, for example, the uploaded songs and the downloaded songs are all catalogued at process block **1920** whereas the songs present on the device **1510**'s storage space are catalogued at the decision block **1908**.

FIG. **19**C is a flowchart **1980** that illustrates another embodiment of the process of flowchart **1900**. In one embodiment, the flowchart **1980** has process and decision blocks that handle an assignment of a playlist that includes songs not present on the device **1510**. The process advances from the start block **1902** through **1908** in the same fashion as the process in flowchart **1900**. In contrast to the process in flowchart **1900**, the process then advances to decision block **1990** rather than **1910**. At decision block **1990**, if songs need to be downloaded, the server site IPAN **1433** checks its records to see if the device **1520** has all the necessary songs on the list of remaining songs to complete the playlist formation. If the device **1520** has none or some but not all of the necessary songs, the process advances to a process block **1950**. At the process block **1950**, the necessary songs that are not present on the device **1520** are catalogued in the new playlist with empty cone icons next to those songs. Optionally, the icon can be a symbol other than an empty cone. The playlist is not yet completely formed and will have additions of songs that are present on the device **1520** at a later point in the process. The process then advances to a process block **1952** and deletes songs that the device **1520** does not have from the list of remaining songs. The process then advances to decision block **1954** to determine if the list of remaining songs is empty. If the list of remaining songs is empty, then the process advances to process block **1922** where the songs present on the device **1510**'s storage space **1512** are catalogued in addition to the missing songs that are catalogued. In one embodiment, cataloguing does not include multiple entries for songs determined to be present at an earlier time. For instance, if a song is present on a device and is catalogued once as being present on the device, a multiple entry for the song being present on the device will not be made at a subsequent iteration of the process. If the list of remaining songs is not empty, the process advances to the process block **1912**. At the process block **1912**, the process in the flowchart **1980** proceeds in the same fashion as the process in flowchart **1900** until the process advances to the process block **1922**. After all the songs (including the missing songs) are catalogued at the process block **1922**, the process advances to the process block **1960** where the list of remaining songs is deleted. At the process block **1962**, if the playlist does not contain any songs with an empty cone icon, the playlist is complete and the process advances to the end process block **1924**. If the playlist contains any songs with an empty cone icon, the process advances to the decision block **1964** to allow the user to delete the missing songs. If the user deletes the missing songs, the playlist is complete, and the process advances to the end process block **1924**. If the user decides not to delete the missing songs, a new list of remaining songs is created consisting of the missing songs not deleted by the user. The process then advances to the decision block **1990**.

At the decision block **1990**, if the device **1520** initially had all the remaining songs on the playlist, the process **1980** proceeds in the same fashion as the process **1900**. In one embodiment, if the process advanced from the process block **1966** rather than **1908**, the missing songs have been added to the storage space **1522** of the device **1520** so that the playlist can now be complete. The process advances through iterations until all the songs present on the playlist are present on the storage space **1512** of the device **1510** or until the user deletes songs from playlist so that no missing songs are present. In one embodiment, the process advances from the process block **1966** to the decision block **1908** in order to check whether the missing songs have been added to the storage space **1512** of the device **1510** or the storage space **1522** of the device **1520** so that the playlist can now be complete.

In one embodiment, the IPAN **1100** includes a network connection so that the first device **1510** and the second device **1520** can have audio files downloaded from the first device **1510** to the second device **1520** almost instantaneously after the assignment of an audio file to the device **1510**. For example, in a home network, the device **1510** does not need to connect to the Internet and can retrieve the necessary file through the network connection.

FIGS. **20**A-**20**F illustrate the use of the action button **1210** on the network-enabled audio devices **1200** or **1300**. FIG. **20**A illustrates the screen display **1802** before the action button **1210** has been pressed. In one embodiment, the action button **1210** can be pressed when an audio source (e.g. an audio source in MP3 file format) with an unidentified artist is playing. Optionally, the action button **1210** can be pressed when an audio source in MP3 file format with an identified artist is playing. Optionally, the action button **1210** can be pressed for audio sources such as, for example, streaming audio, files in WMA file format, CDs, etc. The menu buttons **1821**-**1825** represent the functions that can be performed on the given audio source before the action button **1210** is pressed. For an MP3 file, for example, the menu buttons **1821**-**1825** correspond to a "pause" function, a "next" function, a "previous" function, an "add favorites" function, and a "stop" function. After the action button **1210** is pressed, the menu buttons **1821**-**1825** change context to perform functions that provide additional information on the given audio source and artist. Further, after the action button **1210** is pressed, the artist will no longer be shown as "unknown" because the audio source will be uploaded to a server for analysis to determine the identification of the artist. The server will download the identity of the artist in addition to other information concerning the audio source.

FIG. **20**B illustrates the screen display **1802** after the action button **1210** has been pressed. The "unknown" artist in FIG. **20**A has been determined to be "Moby," and the unidentified MP3 file has been identified as "Porcelain." The menu buttons **1821**-**1825** correspond to menu items that provide information on, or related to, the audio source. A title menu **2002** is provided to indicate the location in the directory of action button options that the user has chosen. If the user is at the beginning of the action button directory structure, the screen display **1802** illustrates the text "action" in the title menu **2002**.

The menu buttons **1821**-**1825** correspond to the menu items "news," "music," "tour," "offers," and "done." By choosing the menu item "news," information will be presented to the user of current events regarding the artist and/or the given audio source. For instance, the "news" function can

display Billboard top **40** information, clothing lines introduced by the artist, new albums, etc. The menu button **1822** corresponding to the "music" menu item provides the user access to other audio sources from a given artist. The menu button **1823** corresponding to the "tour" menu item allows the user to get up-to-date information on tours that the artist is going on. The menu **1824** corresponds to the "offers" menu item which allows the user to receive information on merchandise, promotional items, etc. for the given artist. The menu button **1825** corresponding to the "done" menu item allows a user to turn off the action button **1210**.

FIG. **20**C illustrates the screen display **1802** after the menu item "music" has been chosen. The menu path **2204** lists "action" to indicate to the user that the menu title "music" **2202** was a menu item chosen from the menu items illustrated in the screen shot denoted by the menu title "action." The menu buttons **1821-1825** correspond to the menu items "albums," "similar," "samples," "back," and "done." If the user selects the "albums" menu item the user will be able to view a list of other albums by the artist of the audio source. In one embodiment, the server downloads the albums listing when the action button **1210** is pressed for the first time. Optionally, the server downloads additional information after the user selects one of the menu buttons **1821-1825**. When the user presses the menu button **1822**, the "similar" menu item is chosen and a listing of albums that are from a genre of music similar to that of the audio source or from artists that are in some way similar to the artist of the audio source is presented. If the "similar" menu item is performed on Moby and "Porcelain," a list of techno songs from Moby and/or techno songs from other artists can be presented. If the user presses the menu button **1823** corresponding to the "samples" menu item, audio samples from the artist will be presented. If the user presses the menu button **1824** corresponding to the "back" menu item, the location illustrated in the menu title is returned to. If the user presses the menu button **1825** corresponding to the "done" menu item, the action button **1210** is turned off.

FIG. **20**D illustrates the screen display **1802** after the menu item "albums" has been chosen. The menu path **2204** lists "action/music" to indicate to the user that the menu title "albums" **2202** was a menu item chosen from the menu items illustrated in the screen shot denoted by the menu title "music." The menu buttons **1821-1824** correspond to different albums for the given artist. FIG. **20**D illustrates four of Moby's albums: "Moby," "Ambience," "Everything is Wrong," and "Animal Rights." The menu button **1825** corresponds to the "done" function which allows the user to turn the action button **1210** off.

FIG. **20**E illustrates the screen display **1802** after the menu item "Ambient" is chosen on the screen display **1802** illustrated in FIG. **20**D. The menu path **2204** action/music/albums shows that "Ambient" was chosen from the menu title "albums" **2202**. The menu item "buy" is chosen to purchase the album "Ambient." The menu item "download" is chosen to download the "Ambient" album. The menu item "listen" is pressed to allow the user to listen to the album. The menu item "back" allows the user to access the previous menu title. To reach the screen shot with the menu title "albums" from the menu title "Ambient," the user chooses the "back" menu item. The user can turn the action button off by pressing the "done" menu item.

FIG. **20**F illustrates the screen display **1802** after the user determines to buy the album illustrated in FIG. **20**E. The menu path action/music/albums/buy indicates that the user chose the "buy" menu item in FIG. **20**E. The title menu **2202** "complete" is used at the end of the transaction. The menu item "buy" can be chosen to allow the user to complete the transaction. To reach the screen shot with the menu title "Ambient" from the menu title "Complete," the user chooses the "back" menu item. The menu button **1825** corresponds to the menu item "done" which allows the user to turn the action button **1210** off.

In FIG. **20**B, if the menu item "news" is chosen by the user, the subsequent screen will display the menu path "action," the menu title "news," and the menu items: "listen," "read," "log to myactions," "back," "done." If the user chooses the menu item "read," a subsequent screen displays the menu path "action/news," the menu title "read," and the menu items "log to myactions," "back," and "done." If the user chooses the menu item "log to myactions," information about a particular artist or a particular audio source will be stored in a log for future reference. The displayed menu path will be "action/news/to myactions," the menu title will be "complete," and the menu items will be "back" and "done."

If instead of reading the news, the user would like to listen to the "news," the "listen" menu item can be chosen in the screen displaying the "action" menu path and the "news" menu title. The next screen will display the "action/news" menu path and the "listen" menu title. The screen will also alert the user as to the status of the retrieval of the news. The menu items include "log to myactions," "back" and "done."

In FIG. **20**C, the user can choose the menu item "samples" so that the next screen displays the menu path "action/music," the menu title "samples," and the menu items which include different audio source samples. After the user chooses a sample from the menu items of samples, a screen displays the menu path "action/music/samples," the title menu "Ambient," and the menu items "buy," "download," "listen," "back," and "done." If the user chooses to select the "buy" menu item, the next screen displays the menu path "action/music/samples/buy," the menu title "complete," and the menu items "back," and "done."

In FIG. **20**B, if the user decides to select the menu item "tour," the next screen will display the menu path "action," the menu title "tour," and the menu items "appearing," "log to myactions," "back," and "done." If the user selects the menu item "appearing," the next screen will display a location or locations of tours for the given artist. For example, when the user presses "tour" for "Moby," the screen can display "Dec. 13, 2000 Verizon Amphitheater Irvine Calif." The screen will also display the menu title "appearing" and the menu items "log to myactions," "back," and "done." If the user selects the "log to myactions" menu item, the next screen displays the menu path "action/tour/appearing," the menu title "complete" and the menu items "log to myactions," "back," and "done."

In FIG. **20**B, if the user selects the "offers" menu item, the next screen displays the menu path "action," the menu title "offers," and the menu items "merch," "special," "back," and "done." If the user selects the menu item "merch," the next screen displays the menu path "action/offers," the menu title "merchandise," and the menu items "item one," "item two," "item three," "back," and "done." If the user selects the menu item "item one," the next screen displays the menu path "action/offers/merchandise," "item one," and the menu items "buy," "log to myactions," "back," and "done." If the user selects "buy," the next screen displays the menu path "action/offers/merchandise/buy," the menu title "complete," and the menu items "buy," "back," and "done." The screen also displays the artist and the item selected. For example, the screen displaying "Moby, Item 1" indicates that the user bought Item 1 by Moby. If instead of buying Item 1, the user wishes to keep a log of Item 1 for future reference, the user can upload that

future reference to a server. For instance, in the next screen, the menu path can be "action/offers/merchandise/to myaudioramp." The menu title is "complete," and the menu items are "back" and "done."

In FIG. **20**C, if the user decides to choose "similar" music, the next screen displays the menu path "action/music," the menu title "similar," and the menu items that include audio sources similar to that of the artist with the given audio source. Menu items that can appear on the screen for "Moby," for example, are "808 state," "air," "aphex," "back," and "done." If the user decides to select the menu item "808 state," the next screen displays the menu path "action/music/similar," the menu title "808 state," the menu items "buy," "download," "listen," "back," and "done." If the user decides to buy "808 state," the next screen displays the menu path "action/music/similar/buy," the menu title "complete," and the menu items "back" and "done."

In FIG. **20**C, if the user decides to select the menu item "samples," the next screen displays the menu path "action/music," the menu title "samples," and the menu items that include audio source samples of the given album. The menu items for "Moby" can include "Moby," "Ambient," "Everything is Wrong," "Animal Rights," and "done,"

In FIG. **20**C, if the user selects the menu item "similar," the next screen displays the menu path "action/music/similar," the menu title "listen," and the menu items "back" and "done." The user can also choose to download the similar music. The next screen displays the menu path "action/music/similar," the menu title "download," and the menu items "back" and "done."

In FIG. **21**, after the action button **1210** is pressed, the audio-enabled device **1200** or **1300** can at times play advertisements. For a Nike advertisement, the text "Nike" would be displayed on the first line of the screen. The text of the advertisement, such as "radio free Sydney, air max knukini offer," can be displayed underneath the "Nike" text. The menu title "action" **2002** is displayed and the menu items "buy," "log to myactions," "more info," "offers," and "done" are displayed. If the user decides to buy the products offered in the advertisement, the next screen displays the menu path "action/buy," the menu title "complete," the menu items "back" and "done," and the advertisements are displayed. If the user decides instead to store the offer for a future reference, the menu path "action/to myaudioramp" is displayed in addition to the menu title "complete," and the menu items "back" and "done" are displayed. If the user wishes to receive more information, the "more info" menu item can be chosen. The menu path "action/more info," the menu title "more info," and the menu items "buy," "log to myactions," "offers," and "done" are displayed.

While the above description contains many specifics, these should not be construed as limitations on the scope of the invention, but rather as an exemplification of preferred embodiments thereof. The various user controls and buttons can be relocated, combined, reconfigured, etc. Most of the user controls and buttons can even be omitted entirely in favor of voice-activated commands. One skilled in the art will recognize that many of the various features, and capabilities described in connection with the intelligent radio **100**, are also applicable to other embodiments as well, including the embodiments described in connection with FIGS. **7**-**10** and the network-enabled audio device in FIGS. **13**A-**21**. One skilled in the art will also recognize that other embodiments are contemplated, including, for example, handheld intelligent radios, and intelligent radios for boats, cars, trucks, planes, and other vehicles, etc.

One skilled in the art will recognize that these features, and thus the scope of the present invention, should be interpreted in light of the following claims and any equivalents thereto.

The invention claimed is:

1. An electronic device comprising:

a) a network interface enabling the electronic device to receive an Internet radio broadcast and being further adapted to communicatively couple the electronic device to a central system;

b) a system enabling playback of audio content from a playlist assigned to the electronic device via the central system; and

c) a control system associated with the network interface and the system enabling playback of the audio content indicated by the playlist, and adapted to:

i) enable a user of the electronic device to select a desired mode of operation from a plurality of modes of operation comprising an Internet radio mode of operation and a playlist mode of operation;

ii) receive and play the Internet radio broadcast when the desired mode of operation is the Internet radio mode of operation; and

iii) when the desired mode of operation is the playlist mode of operation:

receive the playlist assigned to the electronic device from the central system, the playlist identifying a plurality of songs, wherein ones of the plurality of songs are not stored on the electronic device;

receive information from the central system enabling the electronic device to obtain the ones of the plurality of songs from at least one remote source;

obtain the ones of the plurality of songs from the at least one remote source; and

play the audio content indicated by the playlist.

2. The electronic device of claim **1** wherein the control system is further adapted to enable playback from a broadcast radio source.

3. The electronic device of claim **1** wherein the control system is further adapted to enable playback from an optical disc.

4. The electronic device of claim **1** further comprising a data storage device, wherein the control system is further adapted to enable playback from the data storage device.

5. The electronic device of claim **1** wherein the control system is further adapted to provide an alarm clock mode.

6. The electronic device of claim **1** wherein the control system is further adapted to:

display a list of Internet radio broadcast stations.

7. The electronic device of claim **1** further comprising a wireless transceiver communicatively coupled to the control system.

8. The electronic device of claim **1** wherein the electronic device is further adapted to receive input from a wireless remote control having a navigation shuttle.

9. The electronic device of claim **1** wherein the control system is further adapted to:

enable the user of the electronic device to receive information on promotional items for the plurality of songs in the playlist.

10. The electronic device of claim **1** further comprising at least one speaker.

11. The electronic device of claim **1** wherein the control system is further adapted to:

a) send a request to a remote server for supplemental information related to a song in real-time while the song is playing;

b) receive the supplemental information from the remote server; and

c) present the supplemental information to the user of the electronic device.

12. The electronic device of claim **11** wherein the supplemental information comprises information enabling the user to listen to samples of a plurality of songs.

13. The electronic device of claim **1** wherein the control system is further adapted to:

receive and display a recommended song.

14. The electronic device of claim **13** wherein the control system is further adapted to:

provide an option to listen to the recommended song.

15. The electronic device of claim **13** wherein the control system is further adapted to:

provide an option to purchase the recommended song.

16. The electronic device of claim **1** wherein playback of the playlist when in the playlist mode of operation is triggered by at least one user settable schedule.

17. The electronic device of claim **16** wherein there are a plurality of user settable schedules.

18. The electronic device of claim **17** wherein at least one of the plurality of user settable schedules is specified by information that comprises a time of day.

19. The electronic device of claim **18** wherein information that specifies the at least one of the plurality of user settable schedules further comprises a day of the week.

20. The electronic device of claim **18** wherein information that specifies the at least one of the plurality of user settable schedules further comprises information that specifies a playlist.

21. An electronic device comprising:

a) a network interface enabling the electronic device to receive an Internet radio broadcast and being further adapted to communicatively couple the electronic device to a central system;

b) a system enabling playback of audio content from a plurality of additional content sources comprising a playlist assigned to the electronic device via the central system; and

c) a control system associated with the network interface and the system enabling playback of the audio content from the plurality of additional content sources, and adapted to:

i) enable a user of the electronic device to select a desired mode of operation from a plurality of modes of operation comprising an Internet radio mode of operation and a plurality of additional modes of operation each corresponding to one of the plurality of additional content sources;

ii) receive and play the Internet radio broadcast when the desired mode of operation is the Internet radio mode of operation; and

iii) play the audio content from one of the plurality of additional content sources when the desired mode of operation is a corresponding one of the plurality of additional modes of operation, where when in a playlist mode of operation, the control system is further adapted to:

receive the playlist assigned to the electronic device from the central system, the playlist identifying a plurality of songs, wherein ones of the plurality of songs are not stored on the electronic device;

receive information from the central system enabling the electronic device to obtain the ones of the plurality of songs from at least one remote source;

obtain the ones of the plurality of songs from the at least one remote source; and

play the audio content indicated by the playlist.

22. The electronic device of claim **21** wherein the plurality of additional content sources further comprises a data storage device of the electronic device.

23. The electronic device of claim **21** wherein the control system is further adapted to provide an alarm clock mode.

24. The electronic device of claim **21** wherein the control system is further adapted to:

display a list of Internet radio broadcast stations.

25. The electronic device of claim **21** further comprising a wireless transceiver communicatively coupled to the control system.

26. The electronic device of claim **21** wherein the electronic device is further adapted to receive input from a wireless remote control having a navigation shuttle.

27. The electronic device of claim **21** wherein the system further enables playback from an optical disc.

28. The electronic device of claim **21** wherein the plurality of additional content sources include a broadcast radio source.

29. The electronic device of claim **21** wherein the plurality of additional content sources include an optical disc source.

30. The electronic device of claim **21** wherein the control system is further adapted to:

enable the user of the electronic device to receive information on promotional items for the plurality of songs in the playlist.

31. The electronic device of claim **21** further comprising at least one speaker.

32. The electronic device of claim **21** wherein the control system is further adapted to:

a) send a request to a remote server for supplemental information related to a song in real-time while the song is playing;

b) receive the supplemental information from the remote server; and

c) present the supplemental information to the user of the electronic device.

33. The electronic device of claim **32** wherein the supplemental information comprises information enabling the user to listen to samples of a plurality of songs.

34. The electronic device of claim **21** wherein the control system is further adapted to:

receive and display a recommended song.

35. The electronic device of claim **34** wherein the control system is further adapted to:

provide an option to listen to the recommended song.

36. The electronic device of claim **34** wherein the control system is further adapted to:

provide an option to purchase the recommended song.

37. The electronic device of claim **21** wherein playback of the playlist when in the playlist mode of operation is triggered by at least one user settable schedule.

38. The electronic device of claim **37** wherein there are a plurality of user settable schedules.

39. The electronic device of claim **38** wherein at least one of the plurality of user settable schedules is specified by information that comprises a time of day.

40. The electronic device of claim **39** wherein information that specifies the at least one of the plurality of user settable schedules further comprises a day of the week.

41. The electronic device of claim **39** wherein information that specifies the at least one of the plurality of user settable schedules further comprises information that specifies a playlist.

42. A method of operation for an electronic device comprising:

a) enabling a user of the electronic device to select a desired mode of operation from a plurality of modes of operation comprising an Internet radio mode of operation and a playlist mode of operation;

b) playing an Internet radio broadcast when the desired mode of operation is the Internet radio mode of operation; and

c) when the desired mode of operation is the playlist mode of operation:

i) receiving a playlist assigned to the electronic device via a central system, the playlist identifying a plurality of songs, wherein ones of the plurality of songs are not stored on the electronic device;

ii) receiving information from the central system enabling the electronic device to obtain the ones of the plurality of songs from at least one remote source;

iii) obtaining the ones of the plurality of songs from the at least one remote source; and

iv) playing audio content indicated by the playlist.

43. The method of claim 42 further comprising:

a) receiving audio content from a broadcast radio source; and

b) playing the audio content from the broadcast radio source.

44. The method of claim 42 further comprising:

a) obtaining audio content from an optical disc; and

b) playing the audio content from the optical disc.

45. The method of claim 42 further comprising:

a) obtaining audio content from a data storage device of the electronic device; and

b) playing the audio content from the data storage device.

46. The method of claim 42 further including enabling the user to set an alarm.

47. The method of claim 42 further comprising displaying a list of Internet radio broadcast stations.

48. The method of claim 42 wherein obtaining the ones of the plurality of songs from the at least one remote source comprises receiving the ones of the plurality of songs from the at least one remote source via a wireless transceiver of the electronic device.

49. The method of claim 42 further comprising:

receiving input from a wireless remote control that enables navigating the playlist.

50. The method of claim 42 further comprising enabling playback from an optical disc.

51. The method of claim 42 further comprising enabling the user of the electronic device to receive information on promotional items for the plurality of songs in the playlist.

52. The method of claim 42 further comprising playing the audio content through at least one speaker.

53. The method of claim 42 further comprising:

a) sending a request to a remote server for supplemental information related to a song in real-time while the song is playing;

b) receiving the supplemental information from the remote server; and

c) presenting the supplemental information to the user of the electronic device.

54. The method of claim 53 wherein the supplemental information comprises information enabling the user to listen to samples of a plurality of songs.

55. The method of claim 42 further comprising receiving and displaying a recommended song.

56. The method of claim 55 further comprising providing an option to listen to the recommended song.

57. The method of claim 55 further comprising providing an option to purchase the recommended song.

58. The method of claim 42 wherein playing the audio content indicated by the playlist when in the playlist mode of operation is triggered by at least one user settable schedule.

59. The method of claim 58 wherein there are a plurality of user settable schedules.

60. The method of claim 59 wherein at least one of the plurality of user settable schedules is specified by information that comprises a time of day.

61. The method of claim 60 wherein information that specifies the at least one of the plurality of user settable schedules further comprises a day of the week.

62. The method of claim 60 wherein information that specifies the at least one of the plurality of user settable schedules further comprises information that specifies a playlist.

63. An electronic device comprising:

a) a wireless transceiver communicatively coupling the electronic device to a base station, the wireless transceiver enabling the electronic device to receive an Internet radio broadcast and communicate with a central system;

b) a system enabling playback of audio content indicated by a playlist assigned to the electronic device via the central system;

c) a control system associated with the wireless transceiver and the system enabling playback of the audio content indicated by the playlist and adapted to:

i) enable a user of the electronic device to select a desired mode of operation from a plurality of modes of operation comprising an Internet radio mode of operation and a playlist mode of operation;

ii) receive and play the Internet radio broadcast when the desired mode of operation is the Internet radio mode of operation; and

iii) when the desired mode of operation is the playlist mode of operation:

receive the playlist assigned to the electronic device from the central system, the playlist identifying a plurality of songs, wherein ones of the plurality of songs are not stored on the electronic device;

receive information from the central system enabling the electronic device to obtain the ones of the plurality of songs from at least one remote source;

obtain the ones of the plurality of songs from the at least one remote source; and

play the audio content indicated by the playlist.

64. The electronic device of claim 63 wherein the control system is further adapted to provide an alarm clock mode.

* * * * *

Petitioner's Demonstratives

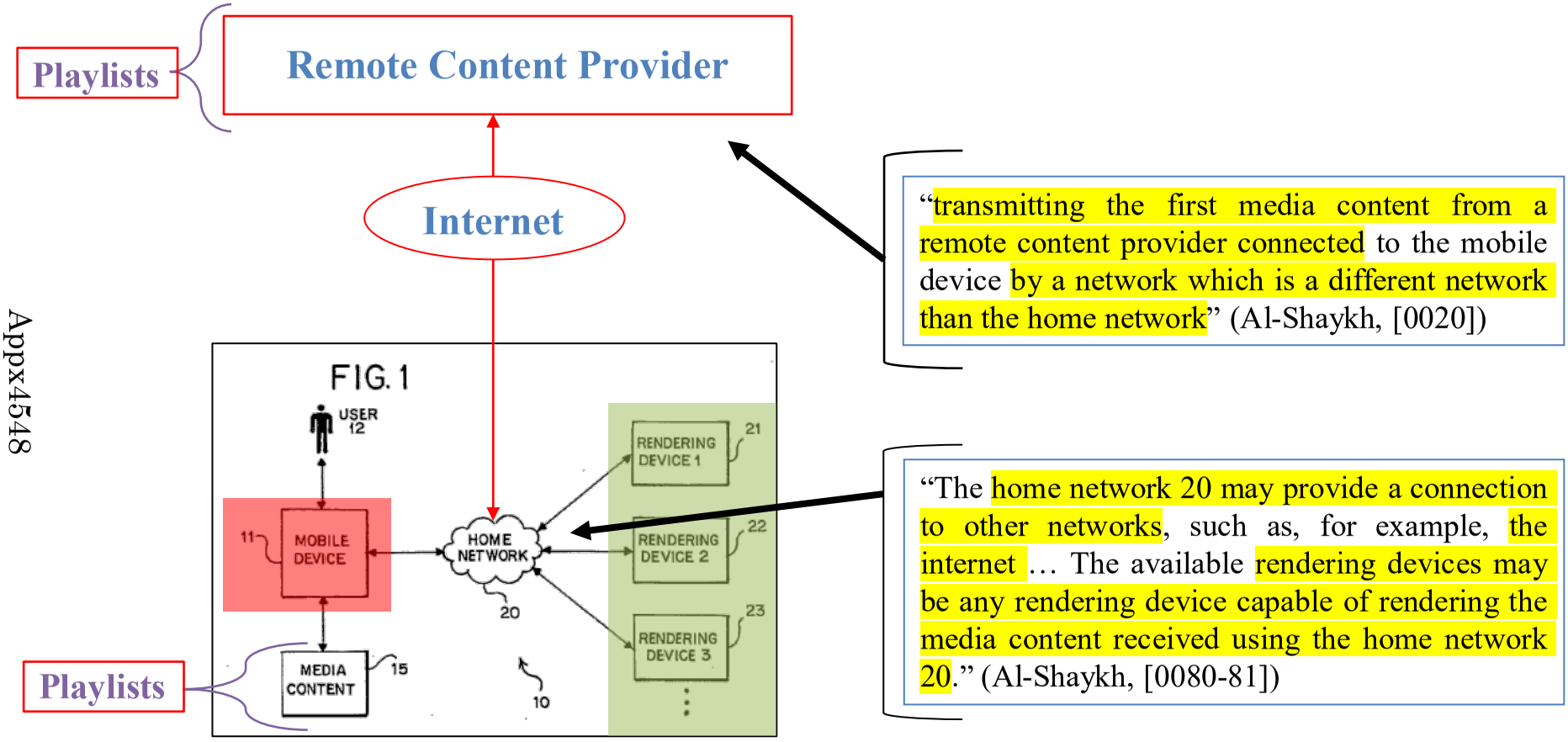
Google LLC
v.
Sonos Inc.

IPR2021-01563
January 18, 2023

GOOGLE EXHIBIT 1038
GOOGLE v. SONOS
IPR2021-01563

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Al-Shaykh's remote content provider provides content over the internet to the devices in the system



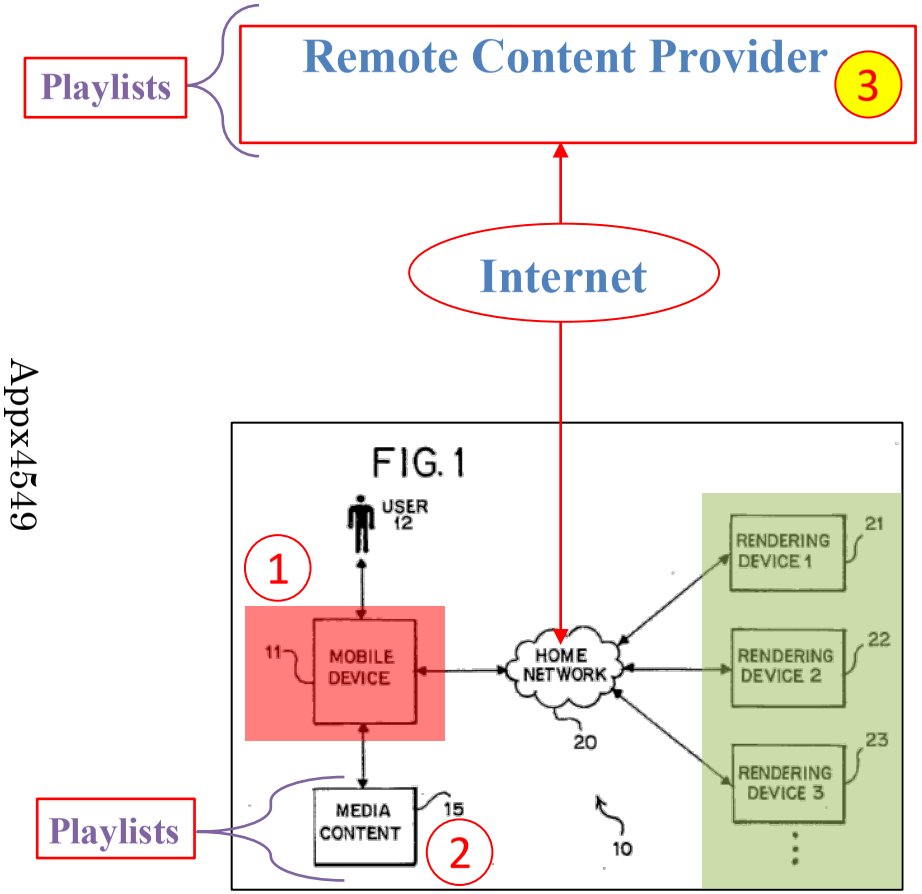
Al-Shaykh, Fig. 1 (annotated)

Appx4548

Pet. at 3-4, 14-15, 20-21, 30-31, 42-44; Al-Shaykh, [0093]

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Al-Shaykh discloses three content sources



Al-Shaykh, Fig. 1 (annotated)

1 "The media content 15 may be stored locally on the mobile device 11"

2 "The media content 15 may be stored remotely relative to the mobile device 11 … on one or more servers in the home network 20."

3 "The media content 15 may be stored remotely relative to the mobile device 11 … outside of the home network 20 and/or accessed using a network connection … [such as the] internet. The mobile device 11 may obtain the media content 15 from one or more content services which may be freely available and/or may require a subscription."

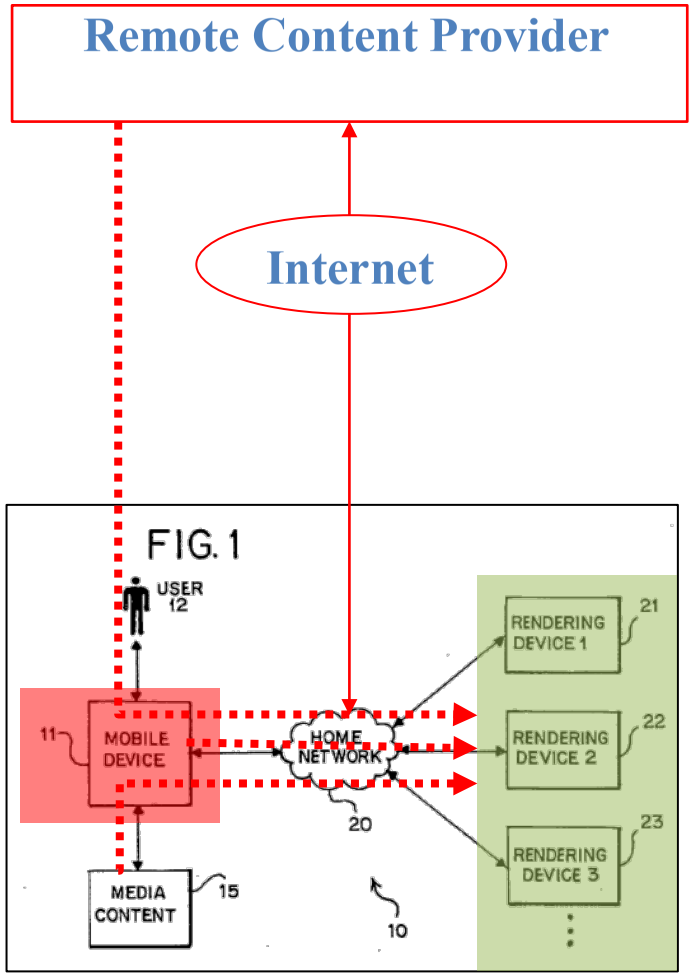
Al-Shaykh, [0082]

Appx4549

Pet. at 4, 14, 43

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Option 1: Al-Shaykh discloses indirect content flow in which content flows through the mobile device



Al-Shaykh, Fig. 1 (annotated)

Indirect Flow Figure

"The transfer of the media content may … originate from and … flow through the mobile device 11. If the "media in context" … is locally stored on the mobile device 11, the media content may be transferred from the mobile device 11 to the target rendering device using the home network 20. ." (Al-Shaykh, [0094])

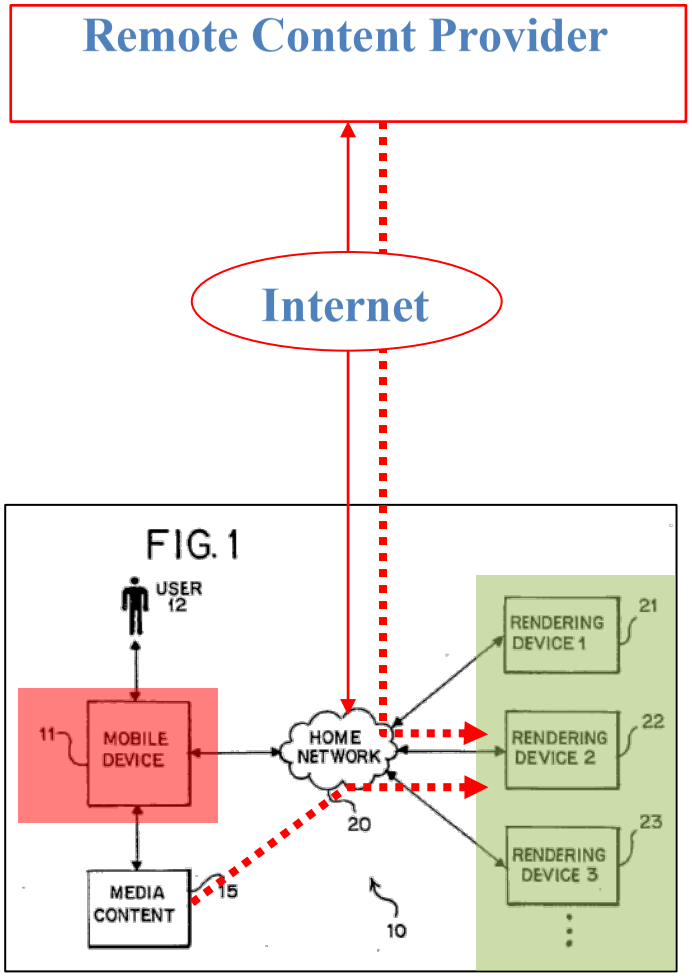
"For example, the mobile device 11 may … obtain the media content from a remote content service …. Then, the mobile device 11 may relay the media content to the target rendering device using the home network 20. In this case, the media content from the remote content service may flow through the mobile device 11" (Al-Shaykh, [0095])

Appx4550

Pet. at 4, 34, 42-44; Reply at 6-7

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Option 2: Al-Shaykh discloses direct content flow in which content does not flow through the mobile device



Al-Shaykh, Fig. 1 (annotated)

Direct Flow Figure

"if the "media in context" … is not stored locally on the **mobile device 11**, the media content … may not flow through the **mobile device 11** [when] transfer … is enabled." (Al-Shaykh, [0094])

"the **mobile device 11** may instruct the **target rendering device** to obtain the media content directly from the media server." (Al-Shaykh, [0096])

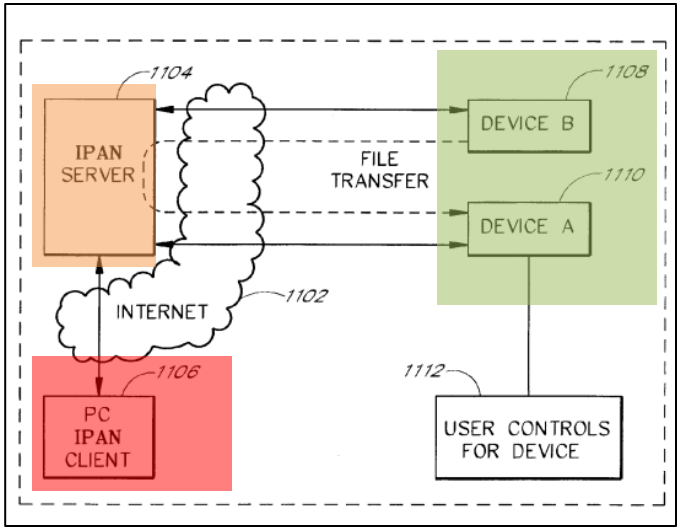
"**rendering devices** may be any rendering device capable of rendering the media content received using the home network 20." (Al-Shaykh, [0080-81])

Appx4551

Pet. at 4, 13-14, 19-21, 42-44

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Qureshey discloses a networked media playback system



Qureshey, Fig. 11 (annotated)

Appx4552

"Optionally, a Local Area Network can be configured in place of, or in addition to, the Internet connection to facilitate assignments of playlists and other features." (Qureshey, Fig. 11, 2:66-3:5)

- Networked media playback system with local area network connecting control device (PC IPAN Client) and playback devices (Devices A and B, but also referred to as "network-enabled audio device," "intelligent radio," and "electronic device")
- The system also has a first cloud server (IPAN Server)

Pet. at 5-8, 15

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner

v.

SONOS, INC.,
Patent Owner

IPR2021-01563
U.S. Patent No. 9,967,615

DECLARATION OF DOUGLAS C. SCHMIDT

Shaykh and Qureshey, either considered alone or in combination, teach independent claim 1, from which claim 7 depends.

5. Dependent Claim 8

248. Dependent claim 8 recites that "causing the one or more first cloud servers to add multimedia content to the local playback queue comprises causing an identifier of the multimedia content to be added to the local playback queue, wherein the identifier indicates a particular source of the multimedia content at the one or more second cloud servers of the streaming content service, wherein the particular playback device receives the multimedia content from the particular source at the one or more second cloud servers of the streaming content service."

249. Dr. Bims opines that Al-Shaykh and Qureshey teaches dependent claim 8. *See* Ex. 1003, ¶¶148-49. However, Dr. Bims has failed to establish that Al-Shaykh and Qureshey teach claim 8 for at least the reason that Dr. Bims has failed to establish that Al-Shaykh and Qureshey, either considered alone or in combination, teach independent claim 1, from which claim 8 depends.

6. Dependent Claim 9

250. Dependent claim 9 recites that "causing one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device comprises sending a message to the streaming content service that causes the one or more first cloud servers to add the multimedia content to the local playback

queue on the particular playback device."

251. Dr. Bims opines that Al-Shaykh and Qureshey teaches dependent claim 9. *See* Ex. 1003, ¶¶150-51. However, Dr. Bims has failed to establish that Al-Shaykh and Qureshey teach claim 9 for at least the reason that Dr. Bims has failed to establish that Al-Shaykh and Qureshey, either considered alone or in combination, teach independent claim 1, from which claim 9 depends.

252. In addition, Dr. Bims has failed to establish that Al-Shaykh and Qureshey, either considered alone or in combination, teach the claimed "message" that is (i) sent from the claimed "control device" to the "streaming content service," and (ii) "causes the one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device" as additionally required by claim 9.

253. In particular, Dr. Bims generally opines that "Al-Shaykh discloses sending a message to the streaming content service" because "a user provides a set of inputs to transfer playback to the rendering devices," and "a POSA would recognize that the user inputs result in sending a message to the remote content service that is associated with the [mobile device's] service-specific application." *Id.*, ¶151. Dr. Bims further opines that such "inputs cause the one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device in the Al-Shaykh-Qureshey combined system." *Id.* I disagree with

Dr. Bims' opinions for two main reasons.

254. ***First***, as explained above, it my opinion that a POSITA would not have been motivated to combine Al-Shaykh and Qureshey in the manner Dr. Bims proposes. *Supra* ¶¶138-151, 168-185.

255. ***Second***, Al-Shaykh's "mobile device" does not send "a message to the streaming content service that causes the one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device" as required by claim 9. To the contrary, as explained above, Al-Shaykh discloses three different approaches in which "media content" is transferred from a "mobile device" to a "target rendering device," and none of them involve a particular "message" that is (i) sent from Al-Shaykh's "mobile device" to a "streaming content service," ***and*** (ii) "causes the one or more first cloud servers to add the multimedia content to the local playback queue on the particular playback device" as required by claim 9. *Supra* ¶¶153-160.

256. At best, in one of the three approaches, Al-Shaykh discloses that "***the mobile device 11***" ***obtains "media content from a remote content service***" and "relay[s] the media content," such that "the media content from the remote content service may flow through the mobile device 11 …" (Ex. 1007, ¶95), which does not amount to the claimed "message" that "causes the ***one or more first cloud servers to add the multimedia content*** to the local playback queue on the particular playback

device."

257. It is therefore my opinion that Dr. Bims has failed to establish that Al-Shaykh and Qureshey, either considered alone or in combination, teach claim 9 for at least the foregoing reasons.

7. Dependent Claim 10

258. Dependent claim 10 recites that "detecting the set of inputs comprises detecting a selection of the multimedia content."

259. Dr. Bims opines that Al-Shaykh alone discloses dependent claim 10. *See* Ex. 1003, ¶152. However, Dr. Bims has failed to establish that Al-Shaykh teaches claim 10 for at least the reason that Dr. Bims has failed to establish that Al-Shaykh and Qureshey, either considered alone or in combination, teach independent claim 1, from which claim 10 depends.

8. Dependent Claim 11

260. Dependent claim 11 recites that "detecting the set of inputs comprises detecting an input that causes playback at the control device to be stopped."

261. Dr. Bims opines that Al-Shaykh alone discloses dependent claim 11. *See* Ex. 1003, ¶153. However, Dr. Bims has failed to establish that Al-Shaykh teaches claim 11 for at least the reason that Dr. Bims has failed to establish that Al-Shaykh and Qureshey, either considered alone or in combination, teach independent claim 1, from which claim 11 depends.

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Date
17.02.2022

Reference	Application No./Patent No.
EPA-146 865	19178151.7 - 1205 / 3554005
Applicant/Proprietor: Sonos Inc.	

Summons to attend oral proceedings pursuant to Rule 115(1) EPC

You are hereby summoned to attend oral proceedings arranged in connection with the above-mentioned European patent.

The matters to be discussed are set out in the communication accompanying this summons (EPO Form 2906).

The oral proceedings, which will be public, will take place before the opposition division

on 05+06.09.2022 (2DAYS) at 09:30 hrs

The parties will be informed on the form of oral proceedings nearer to the scheduled date.

No changes to the date of the oral proceedings can be made, except on serious grounds (see OJ EPO 1/2009, 68). If you do not appear as summoned, the oral proceedings may continue without you (R. 115(2) EPC, see also OJ EPO 10/2008, 471).

Your attention is drawn to Rule 4 EPC, regarding the language of the oral proceedings, and to the Special edition No. 3 OJ EPO 2007, L.1., concerning the filing of authorisations for company employees and lawyers acting as representatives before the EPO.

The final date for making written submissions and/or amendments (R. 116 EPC) is 05.07.22.

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For the Opposition Division

Annexes:
Confirmation of receipt (Form 2936)
Rule 4 EPC (EPC Form 2043)
Communication (EPO Form 2906)

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Registered Letter

to EPO postal service: 10.02.22

SONOS EXHIBIT 2026
GOOGLE v. SONOS (IPR2021-01563)

D9 discloses features 1.1 to 1.3.1 and 1.4 (fig. 2, 5, 6 and 12; page 20, lines 9-12, 19-21, 30-33; page 21, lines 29-30; page 22, lines 13-19, 22-25; page 23, lines 24-26; page 24, lines 11-23; page 25, lines 2-11; page 26, lines 33 to page 27, line 11; page 27, lines 21-33; page 39, lines 12-14; page 39, line 29 to page 40, line 12; page 43, lines 6-16; page 45, line 22 to page 46, line 2; page 61, lines 3-9; page 61, line 27 to page 62, 15) wherein the item 35 of figure 5 is read as "connector state indicator.

D9 fails to disclose features 1.3.2 and 1.5. In fact, as disclosed from page 61, line 27 to page 62, line 15, the transfer of media items to a rendering target device is performed only if it is enabled, otherwise, said transfer is stopped. Hence, the transfer of the media items to a selected rendering target device is only performed when the transfer enabling option is selected, otherwise, said transfer is not performed or it is stopped. Besides, D9 discloses in page 45, lines 4-20 that when a transfer is enabled, the mobile and the rendering target devices plays the media items simultaneously. However, when the enable option is unselected, the transfer is stopped, and as it is also disclosed in page 62, lines 4-12, the rendering target device stops rendering the media items, showing, therefore, that the rendering target device does not have an associated playback queue that is populated with a playlist when a transfer is performed.

Therefore, the Opposition Division is of the preliminary opinion that granted claims 1, 14 and 15 are novel in view of D9.

8.4 Over D10 and D11

8.4.1 D10 is a video describing the functionality of "Apple Airplay" and uploaded in Youtube on March 4th, 2013. Airplay is an interface for wirelessly streaming content from iOs or macOS devices to Airplay-enabled receiver such as speaker. These speaker could be located in different rooms.

D10 discloses a mobile phone comprising a Music application wherein a playlist is displayed. The Music application has the icon "Airplay" (connector state indicator) in the lower right corner that changes color according to whether the mobile device is connected or not to the speaker. When pressing "Aiplay" icon, a list of different playback devices and zones is displayed and a dedicated playback queue is associated with each playback device. When selecting a playback device, the music track previously played via the mobile phone is now played via the selected playback device.

D11 also discloses the features of granted claim 1 (page 2-4).